

(Cover Letter)

(will be pasted here when signed)

**2010 1-Hour SO₂ National Ambient
Air Quality Standard
Infrastructure State
Implementation Plan Revision**



Jim Macy, Director
MONTH XX, 2020

Contents

I.	Introduction.....	4
II.	State of Nebraska Provisions to meet the requirements of Section 110(a)(1) and (2) of the Clean Air Act	6
	a. Nebraska Environmental Protection Act (NEPA)/Nebraska Revised Statutes Chapter 81	6
	b. Nebraska Administrative Code, Title 129 – Air Quality Regulations	6
	c. Nebraska Ambient Air Quality Monitoring Plans	7
III.	Sulfur Dioxide Designations.....	8
	a. Nebraska 2010 1-Hour SO ₂ NAAQS Designations.....	8
	b. Adjacent States' 1-Hour SO ₂ NAAQS Designations.....	10
	1) COLORADO.....	10
	2) IOWA.....	11
	3) KANSAS	13
	4) MISSOURI.....	14
	5) SOUTH DAKOTA.....	16
	6) WYOMING.....	17
	17
IV.	Sulfur Dioxide Emissions and Trends	18
	a. Nebraska Emissions and Trends.....	18
	1) Nebraska City Station (NCS) (Otoe County) – Facility ID 58343	22
	2) North Omaha Station (Douglas County) – Facility ID 59763.....	24
	3) Ash Grove Cement Company (Cass County) – Facility ID 4129.....	26
	4) Lon D Wright Power Plant (Dodge County) – Facility ID 48518	28
	5) Clean Harbors Environmental Services (Kimball County) – Facility ID 58562	30
	6) Western Sugar Cooperative (Scotts Bluff County) – Facility ID 44141.....	32
	7) Douglas County Recycling Landfill (Douglas County) – Facility ID 62593.....	34
	b. Adjacent States' Emissions and Trends	36
	1) Iowa Sources	39
	2) Missouri Sources.....	43
V.	Sulfur Dioxide Monitoring Data Trends	46
	a. Nebraska Monitoring Data Trends.....	46
	b. Adjacent States' Monitoring Data Trends.....	46
VI.	Prongs 1 and 2 Analysis	47
VII.	Summary	50
	APPENDICES.....	51

I. Introduction

The United States Environmental Protection Agency (EPA) revised the National Ambient Air Quality Standard (NAAQS) for sulfur dioxide (SO₂) on June 2, 2010 (75 FR 35520, June 22, 2010). Under section 110(a)(2) of the Federal Clean Air Act (CAA), states are required to address basic “infrastructure” elements within three years of promulgation of a revised NAAQS. The submittals in which states address these requirements are referred to as “infrastructure state implementation plans” or I-SIPs.

Pursuant to section 110(a)(2)(D)(i) of the CAA, Nebraska’s I-SIP for the 2010 SO₂ NAAQS is required to “contain adequate provisions -

- (i) prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will-

- (I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard...”

EPA uses the terms “Prong 1” and “Prong 2” to reference the elements that address interstate contribution to nonattainment (Prong 1) and maintenance (Prong 2) with respect to the NAAQS; these terms will be used throughout this document. The portion of an I-SIP that addresses interstate contribution (Prongs 1 and 2) is referred to as a “Transport SIP”, a term that is also used in this document.

The State of Nebraska, pursuant to section 110(a)(1) of the CAA, submitted its I-SIP for the 2010 SO₂ NAAQS in August 2013, following a public notice period in April 2013 and a public hearing in May 2013. Because the Cross-State Air Pollution Rule (CSAPR) was vacated by a federal appeals court in April 2012, EPA issued a memo in November 2012 from then-Assistant EPA Administrator Gina McCarthy (“the McCarthy Memo”)¹, which communicated that EPA did not expect states to address interstate transport requirements at that time. Nebraska’s submittal included language addressing CAA section 110(a)(2)(D)(i)(I) that reflected EPA’s advisement in the memo. EPA approved Nebraska’s I-SIP submittal, but did not act on the section that addressed interstate transport.²

The Nebraska Department of Environment and Energy (NDEE) is granted authority under Nebraska Revised Statutes 81-1504(4) “to act as the state water pollution, air pollution, and solid waste pollution control agency for all purposes of...the Clean Air Act, as amended, 42 U.S.C. 7401 et seq...” This statute grants NDEE the authority and responsibility to act on behalf of the State of Nebraska to develop and revise a SIP as required by CAA section 110(a)(1) and

¹ *Next Steps for Pending Redesignation Requests and Pending State Implementation Plan Actions Affected by the Recent Court Decision Vacating the 2011 Cross-State Air Pollution Rule* (November 19, 2012), Memo to Air Division Directors, Regions 1-10 https://www3.epa.gov/ttn/naaqs/aqmguidance/collection/cp2/20121119_mccarthy_redesig_sips_csapr_vacature.pdf

² See 83 FR 14179, May 3, 2018. In section II of the document, EPA states “As discussed in the TSD, EPA is not acting, at this time, on section 110(a)(2)(D)(i)(I) - prongs 1 and 2, as it relates to the 2010 SO₂ NAAQS as those elements were not part of the state SIP submission.” <https://www.govinfo.gov/content/pkg/FR-2018-04-03/pdf/2018-06654.pdf>

ensure that the plan adequately addresses the required infrastructure elements prescribed under CAA section 110(a)(2)(D)(i)(I) Prongs 1 and 2.

In this submittal, NDEE revises its I-SIP to address the Prong 1 and 2 interstate transport requirements as required by section 110(a)(2)(D)(i)(I), and confirms that adequate provisions exist to prohibit sources or other emission activities within Nebraska from emitting SO₂ in amounts that would contribute significantly to nonattainment in, or interfere with maintenance by, another state with respect to the 2010 SO₂ NAAQS. The certification that Nebraska's plan meets the I-SIP requirements for the 2010 SO₂ NAAQS as detailed in the Federal CAA section 110(a)(2)(D)(i)(I) Prongs 1 and 2 is included as Appendix 1.

On September XX, 2020, pursuant to requirements of 40 CFR 51.102, this document was posted for public notice and comment, which announced the Department's intent to revise Nebraska's 2010 SO₂ NAAQS I-SIP. Comments received were addressed and are included in Appendix 8 of this submittal. No request for public hearing was requested / A public hearing was requested and held on October XX, 2020. A draft copy of the proposed I-SIP revision was provided to EPA Region 7; no comments were received from EPA / comments received from EPA are addressed in Appendix 8.

NOTE: The spatial scale utilized for the analysis of SO₂ transport in this demonstration is the "urban scale" (4-50 kilometers (km)), which has been used by EPA in evaluating numerous 2010 1-Hour SO₂ NAAQS Transport SIPs. This geographical area surrounding a source is considered an appropriate area in which SO₂ impacts could be reasonably expected to occur. In this document, NDEE provides its demonstration of compliance with CAA section 110(a)(2)(D)(i)(I) Prongs 1 and 2 by an assessment of point sources within Nebraska that emit significant amounts of SO₂, and the impact from these sources on nonattainment and/or maintenance areas in adjacent states, within 50 km of the Nebraska border.

II. State of Nebraska Provisions to meet the requirements of Section 110(a)(1) and (2) of the Clean Air Act

Certification that Nebraska's Transport SIP meets the requirements in Section 110(a)(2)(D)(i)(I) is contained in **Appendix 1**.

a. Nebraska Environmental Protection Act (NEPA)/Nebraska Revised Statutes Chapter 81

NOTE: Some statutes reference the Nebraska Department of Environmental Quality (NDEQ) as they have not yet been revised to reflect the current agency name "Nebraska Department of Environment and Energy" or "NDEE", which became effective on July 1, 2019.

- 1) Section 81-1504 specifies that the NDEQ has the power and duty to develop programs for the prevention, control, and abatement of new and existing sources of air pollution.
- 2) Section 81-1505 specifies that the Nebraska Environmental Quality Council (EQC) is charged with the adoption and promulgation of rules and regulations which set air quality standards within the state.
- 3) Section 81-1505(12)(a) provides the duty of adopting and promulgating a construction air permit program to the EQC that requires the owner/operator of an air contaminant source to obtain a permit prior to construction.

b. Nebraska Administrative Code, Title 129 – Air Quality Regulations

The following portions of the state air regulations (Title 129) are approved into the Nebraska SIP:

- 1) Title 129, Chapter 1, Section 008 defines "Affected States" to mean all states that are contiguous to the state of Nebraska; this includes Colorado, Iowa, Kansas, Missouri, South Dakota, and Wyoming, as well as those who may be affected by emissions from a Nebraska source seeking a Class I permit, modification, or renewal. This definition also includes any state within 50 miles (80 km) of the permitted source.
- 2) Title 129, Chapter 4, Section 002 contains the 2010 1-Hour SO₂ standard specified in 40 CFR Part 50.17, adopted on December 9, 2013. This includes the adoption and incorporation of Appendix T of 40 CFR Subpart 50 (July 1, 2013) by which attainment with the standard is determined.
- 3) Title 129, Chapter 13 addresses the notification of affected states of draft Class I operating permits for sources within Nebraska. Specifically, Chapter 13, Section 002 specifies that affected states shall be notified of these draft permits prior to notification of the public. Chapter 13, Section 006.01A specifies that a Class I operating permit will not be issued by the Department until affected states have had an opportunity to review the draft permit.
- 4) Title 129, Chapter 15, addresses notification of affected states of permit revisions. Specifically,

- a. Section 003.04A provides for notification of affected states of a requested permit revision for Class I operating permits, providing those states a period of 30 days for review and comment on a complete permit revision application, and notification of such state of a refusal by the Department to accept all recommendations submitted by the affected state.
 - b. Sections 004.03E1 and 004.03E2 provide for notification of affected states of the request for group processing of a source's minor permit revision, a period of 30 days for review and comment on the request, and notification of such state of a refusal by the Department to accept all recommendations submitted by the affected state.
 - c. Section 005.03 provides for review by affected states of applications for significant permit revisions.
- 5) Title 129, Chapter 17, Section 007 specifies that the Department require sufficient information in construction permit applications to determine if new or modified sources will interfere directly or indirectly with attainment or maintenance of National Primary or Secondary Ambient Air Quality Standards. Specifically, Chapter 17, Section 013 specifies requirements for construction or modification of sources in nonattainment areas.
- a. Construction permits are issued by the Department for most of the state. Sources within Lancaster County obtain construction permits from the Lincoln-Lancaster County Health Department (LLCHD). Likewise, facilities within Omaha city limits obtain a construction permit from the Omaha Air Quality Control (OAQC). These agencies act as agents of the state to administer and enforce requirements.
- 6) Title 129, Chapter 19 specifies the "Prevention of Significant Deterioration (PSD) of Air Quality" permit program utilized by Nebraska. Specifically, Chapter 19, Section 010.03 adopts the appropriate significance thresholds for SO₂ (40 tons per year).

c. Nebraska Ambient Air Quality Monitoring Plans

- 1) The annual Nebraska Ambient Air Quality Monitoring Plans outline the monitoring activities conducted by the Department and two local agencies (LLCHD and Douglas County Health Department (DCHD)). Nebraska currently monitors SO₂ at four sites in the state: three monitoring sites in the Omaha Municipal Statistical Area (MSA), with one being a source-oriented monitor; and one source-oriented monitoring site in Lancaster County. All monitors are presently demonstrating attainment with the NAAQS.

The three SO₂ monitors in the MSA included in the monitoring plans are the Omaha NCORE monitor (AQS ID 31-055-0019), the Whitmore monitor (AQS ID 31-055-0053), and the Omaha Public Power District North Omaha Station monitor (AQS ID 31-055-0057).

III. Sulfur Dioxide Designations

a. Nebraska 2010 1-Hour SO₂ NAAQS Designations

On March 2, 2015, the U.S. District Court for the Northern District of California accepted a Consent Decree to resolve litigation concerning the deadline for completing designations for the 2010 1-Hour SO₂ NAAQS. The Consent Decree requires that EPA designations for all remaining undesignated areas in the country be completed in three additional rounds: Round 2 by July 2, 2016; Round 3 by December 31, 2017; and Round 4 by December 31, 2020.

Round 1 designations addressed nonattainment areas in the states and were published in the Federal Register (FR) on August 5, 2013 (78 FR 47191); Round 2 designations were published on July 12, 2016 (81 FR 45039); and Round 3 designations were published on January 9, 2018 (83 FR 1098). Round 4 designations are to be promulgated by December 31, 2020, per the Consent Decree. Nebraska designations have been established as follows:

Round 1 – No areas in Nebraska were designated in this round.

Round 2

Area	Designation
Lancaster County	Unclassifiable
Lincoln County	Unclassifiable/Attainment
Otoe County	Unclassifiable/Attainment

Round 3

Area	Designation
Douglas County	Not designated
Remainder of state, excluding Douglas and Lancaster Counties	Unclassifiable/Attainment

Two areas in Nebraska are pending final designations under this NAAQS: Douglas County and Lancaster County. These designations will rely on monitoring data from two source-oriented monitors located in these counties, both in operation beginning January 2017 in accordance with the 2010 SO₂ Data Requirements Rule (DRR). The certified monitoring data indicates that both areas are in attainment with the NAAQS, as both monitors have design values (DVs) less than 50% of the standard.

NDEE submitted a revised designation recommendation of “Attainment/Unclassifiable” for these areas to EPA on May 6, 2020. On August 13, 2020, EPA notified the Governor of Nebraska of its intended designation of “Attainment/Unclassifiable” for Douglas County, and on September 2, 2020, EPA’s proposed designation of “Attainment/Unclassifiable” for Lancaster County was published in the Federal Register (85 FR 54517). These documents are included as **Appendix 2**.

The source in Douglas County subject to the described source-oriented monitoring is North Omaha Station, a coal-fired power plant located within 50 km of the Nebraska border. This source is further discussed and evaluated in section IV.2. of this document.

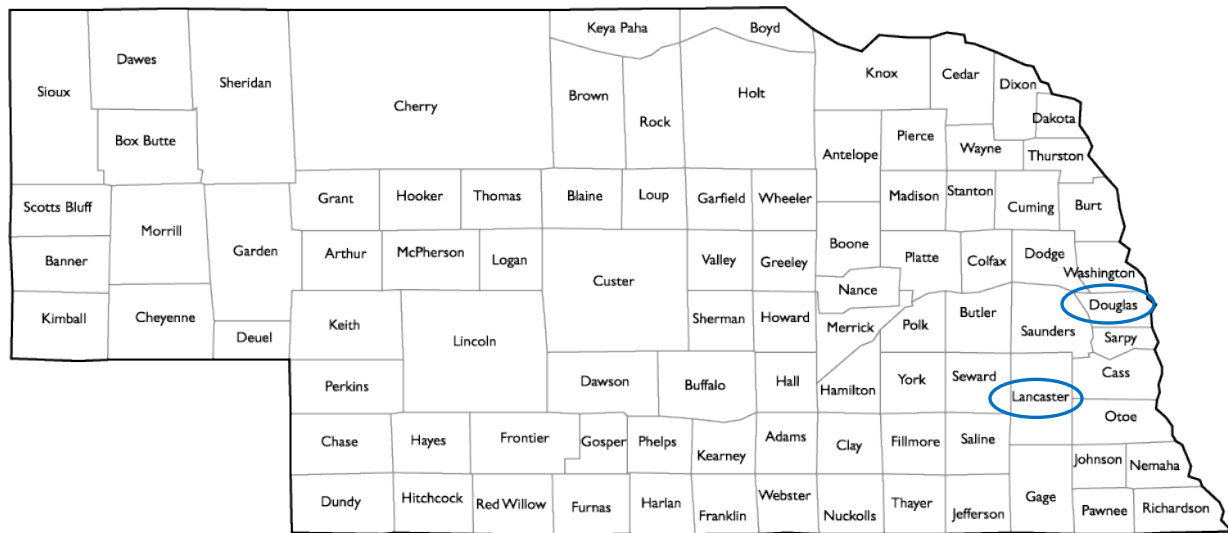


Figure 1. Nebraska State Map With Counties

Source: World Atlas

<https://www.worldatlas.com/webimage/countrys/america/usstates/counties/necountymap.htm>

DRAFT

b. Adjacent States' 1-Hour SO₂ NAAQS Designations

1) COLORADO

All areas in Colorado are designated as in attainment with the 2010 1-Hour SO₂ NAAQS, with the exception of two areas: portions of El Paso and Morgan Counties. Both areas are more than 50 km from the Nebraska border. The nearest of the two is the portion of Morgan County surrounding the Pawnee Generating Station, approximately 80-85 km from the Nebraska panhandle's southern border. Colorado counties are shown in the map in **Figure 2** below.

Round 1 – No areas in Colorado were designated in this round.

Round 2

Area	Designation
Portion of El Paso County	Unclassifiable
Portion of Morgan County	Unclassifiable

Round 3

Area	Designation
All Remaining Counties	Unclassifiable/Attainment

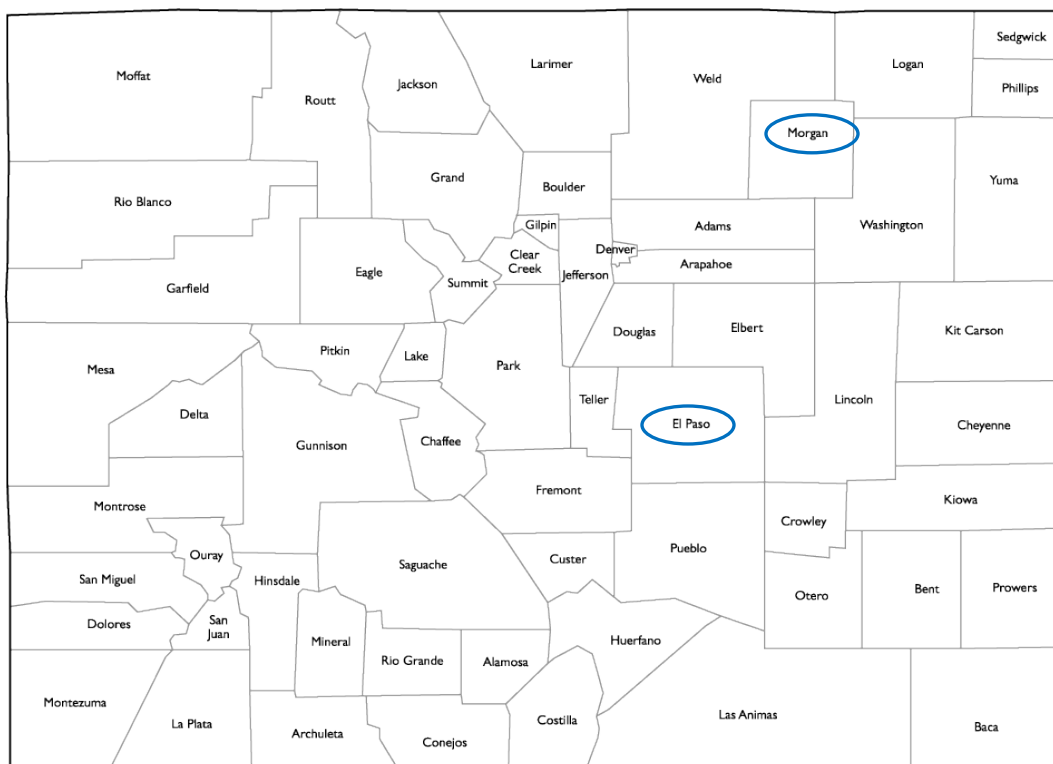


Figure 2. Colorado State Map With Counties

Source: World Atlas

<https://www.worldatlas.com/webimage/countrys/america/usstates/counties/cocountymap.htm>

2) IOWA

All areas in Iowa are designated as in attainment with the 2010 1-Hour SO₂ NAAQS except the following areas: portions of Muscatine County, and Linn and Woodbury Counties.

Two areas within Muscatine County are presently designated as “Maintenance” or “Nonattainment” and both are located more than 50 km from the Nebraska border (see **Figure 3**, page 12). Two areas (Linn and Woodbury Counties) are designated as “Unclassifiable”. Only Woodbury County is within 50km of the Nebraska border, and this area is addressed in later sections of this document.

Round 1

Area	Designation
Portions of Muscatine County	Nonattainment

Round 2

Area	Designation
Woodbury County	Unclassifiable
Des Moines County	Unclassifiable/Attainment
Wapello County	Unclassifiable/Attainment

Round 3

Area	Designation
Linn County	Unclassifiable
All Remaining Counties	Unclassifiable/Attainment

Iowa SO2 Nonattainment Areas (2010 Standard)

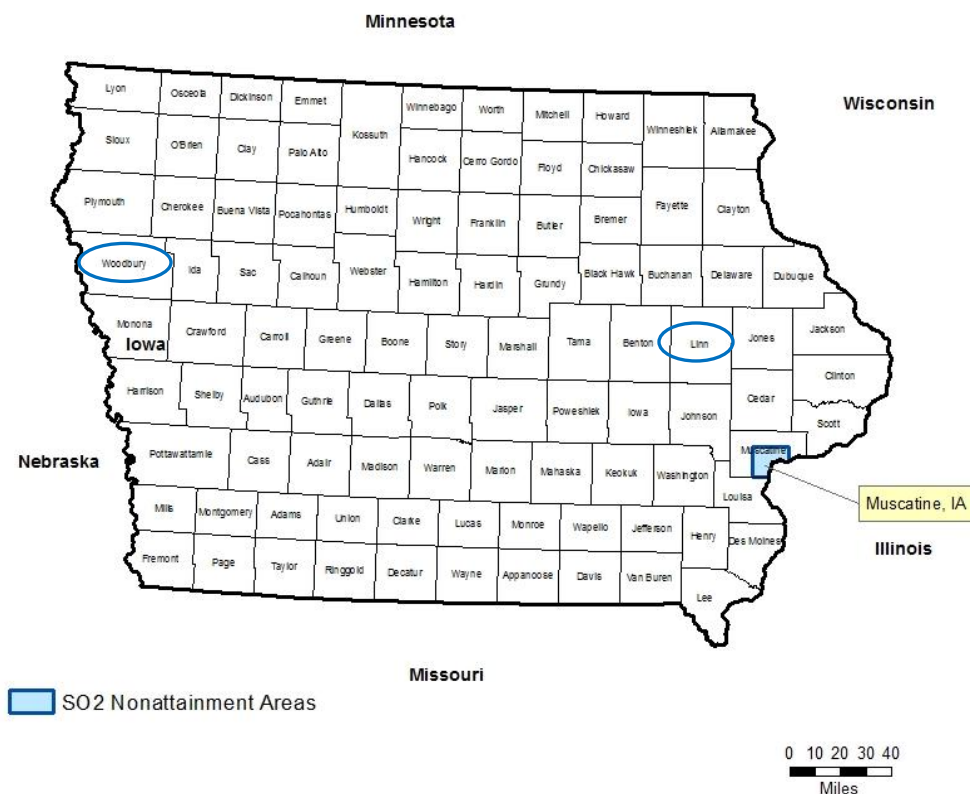


Figure 3. Iowa Map With Counties – SO₂ Nonattainment Areas (2010 Standard)

Source: EPA Green Book – Nonattainment Areas

https://www3.epa.gov/airquality/greenbook/iaso2_2010.html

3) KANSAS

All areas in Kansas are designated as in attainment with the 2010 1-Hour SO₂ NAAQS, with the exception of the following two areas: Shawnee and Wyandotte Counties. Both areas are more than 50 km from the Nebraska border. Kansas counties are shown in the map in **Figure 4** below.

Round 1 – No areas in Kansas were designated in this round.

Round 2

Area	Designation
Shawnee County	Unclassifiable
Wyandotte County	Unclassifiable
Linn County	Unclassifiable/Attainment

Round 3

Area	Designation
All Remaining Counties	Unclassifiable/Attainment

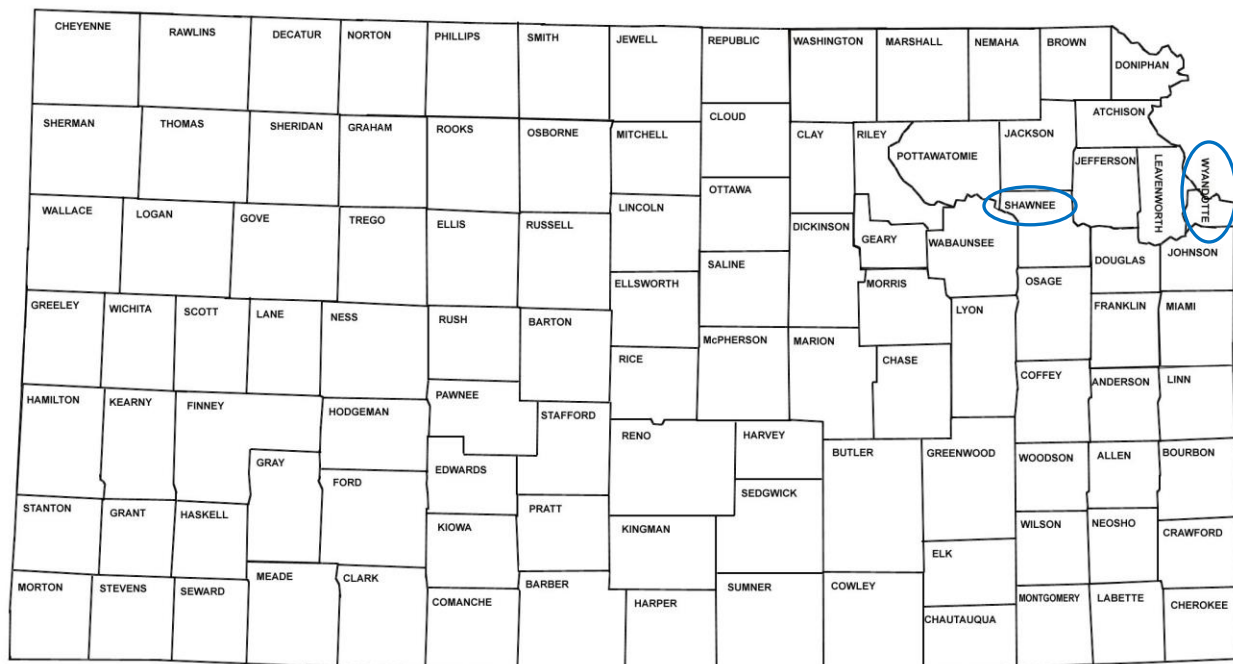


Figure 4. Kansas State Map With Counties

Source: Kansas State Historical Society

<https://www.kshs.org/kansapedia/county-history-project/15256>

4) MISSOURI

All areas in Missouri are designated as in attainment with the 2010 1-Hour SO₂ NAAQS, with the exception of the following areas: portions of Franklin, Jackson, Jefferson, and St. Charles Counties. Two counties (Iron and Madrid Counties) have yet to be designated. All of these areas are more than 50km from the Nebraska border (see **Figure 5**, page 15).

Round 1

Area	Designation
Portion of Jackson County	Nonattainment
Portion of Jefferson County	Nonattainment

Round 2

Area	Designation
Portion of Franklin County	Unclassifiable
Portion of St. Charles County	Unclassifiable
Portion of Jackson County	Unclassifiable
Scott County	Unclassifiable/Attainment

Round 3

Area	Designation
All Remaining Counties, except Iron and New Madrid Counties	Unclassifiable/Attainment

On August 6, 2020, EPA notified the Governor of Missouri of its intended designation of “Attainment/Unclassifiable” for Franklin and St. Charles Counties.³ These proposed designations are based on the most recent (2017-2019) air monitoring data for monitors in the Franklin County area, demonstrating attainment with the NAAQS.

³ EPA letter to Governor Michael Parson (Missouri) https://www.epa.gov/sites/production/files/2020-08/documents/proposed_so2_naaqs_redesignation_letterhead.pdf

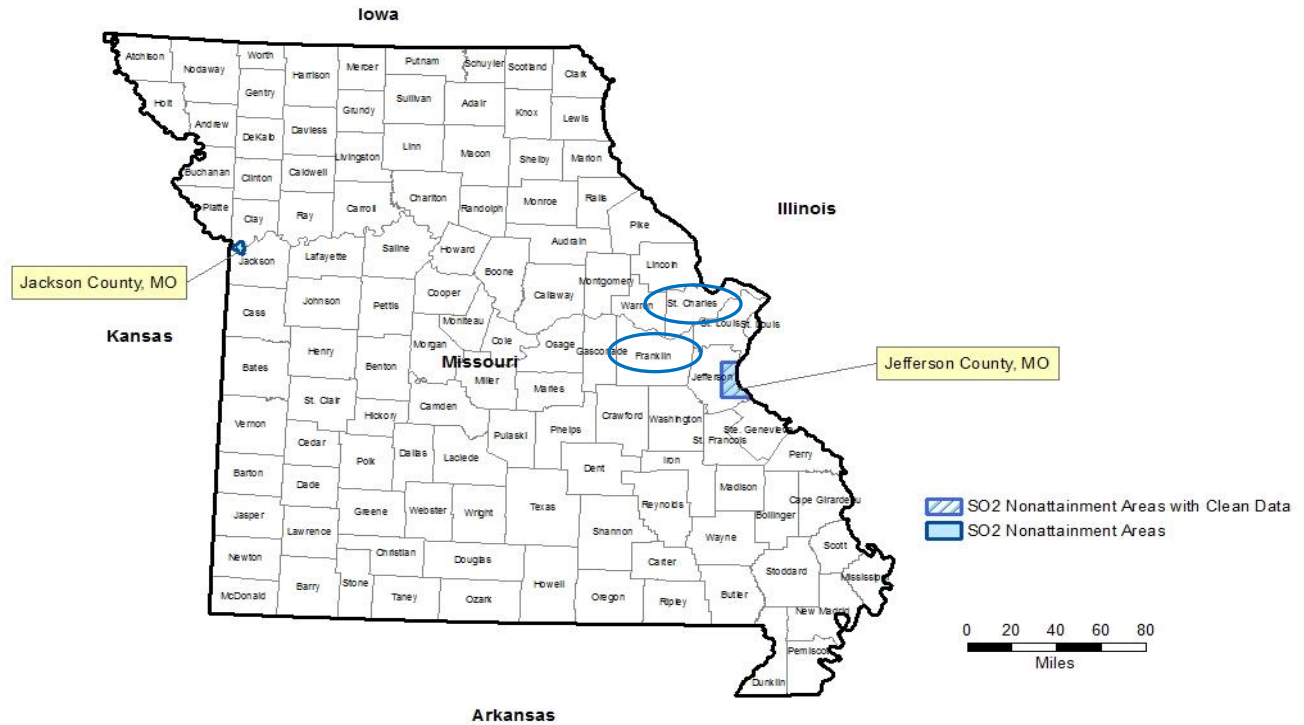


Figure 5. Missouri Map With Counties - SO₂ Nonattainment Areas (2010 Standard)

Source: EPA Green Book – Nonattainment Areas

https://www3.epa.gov/airquality/greenbook/moso2_2010.html

5) SOUTH DAKOTA

All areas in South Dakota are designated as in attainment with the 2010 1-Hour SO₂ NAAQS. South Dakota counties are shown in the map in **Figure 6** below.

Round 1 – No areas in South Dakota were designated in this round.

Round 2

Area	Designation
Grant County	Unclassifiable/Attainment

Round 3

Area	Designation
All Remaining Counties	Unclassifiable/Attainment

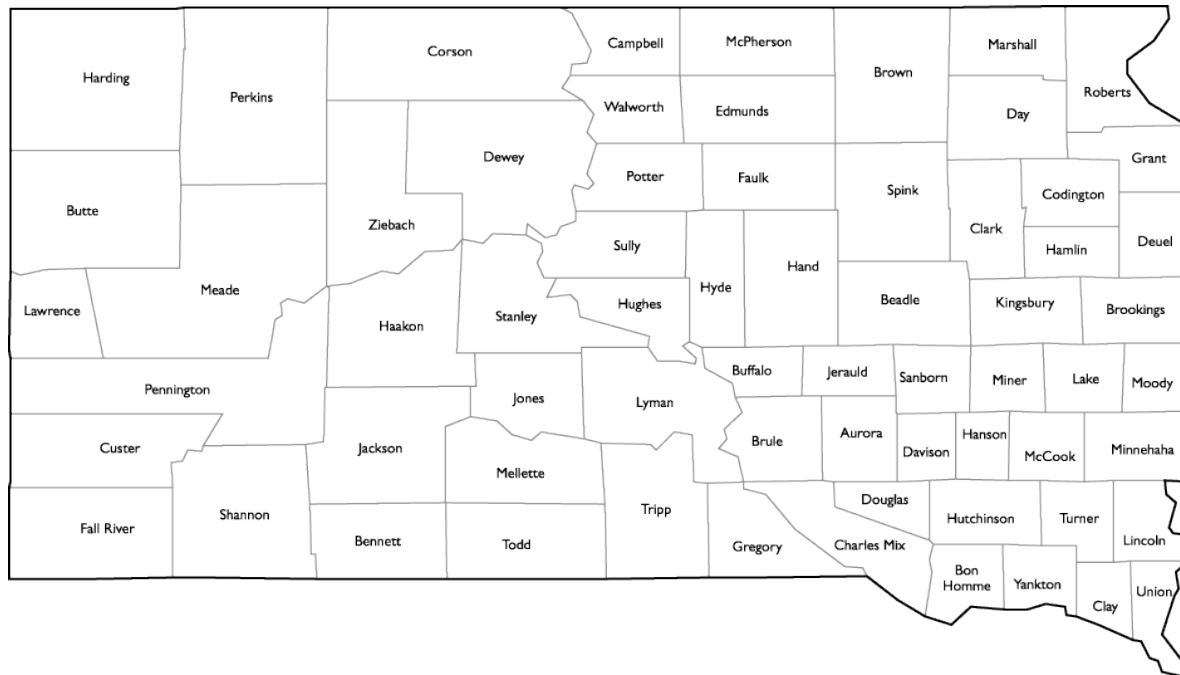


Figure 6. South Dakota State Map With Counties

Source: World Atlas

<https://www.worldatlas.com/webimage/countrys/namerica/usstates/counties/sdcountymap.htm>

6) WYOMING

All areas in Wyoming are designated as in attainment with the 2010 1-Hour SO₂ NAAQS, with the exception of four areas which have yet to be designated: Carbon and Converse Counties, and the remaining portions of Fremont and Sweetwater Counties. All areas are more than 50 km from the Nebraska border. Wyoming counties are shown in the map in **Figure 7** below.

Round 1 – No areas in Wyoming were designated in this round.

Round 2 – No areas in Wyoming were designated in this round.

Round 3

Area	Designation
All Counties except Carbon and Converse Counties, and portions of Fremont and Sweetwater Counties	Unclassifiable/Attainment
Lincoln County	Unclassifiable/Attainment
Otoe County	Unclassifiable/Attainment

On August 12, 2020, EPA notified the Governor of Wyoming of its intended designation of “Attainment/Unclassifiable” for those counties, and portions thereof, not yet designated.⁴

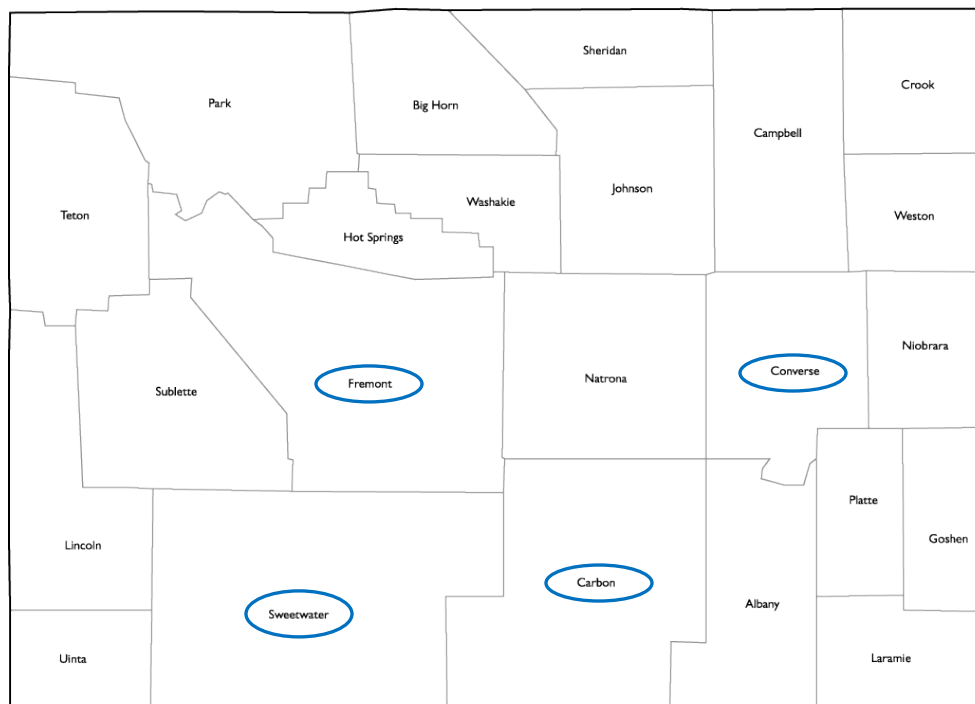


Figure 7. Wyoming State Map With Counties

Source: World Atlas

<https://www.worldatlas.com/webimage/countrys/america/usstates/counties/wycountymap.htm>

⁴ EPA 120-day letter to Governor Mark Gordon (Wyoming) https://www.epa.gov/sites/production/files/2020-08/documents/wyoming_signed_120-dayletter.pdf

IV. Sulfur Dioxide Emissions and Trends

a. Nebraska Emissions and Trends

Emissions trends for SO₂ in Nebraska (2006-2019) show a 49.7% decrease in emissions. (**Figure 8**).

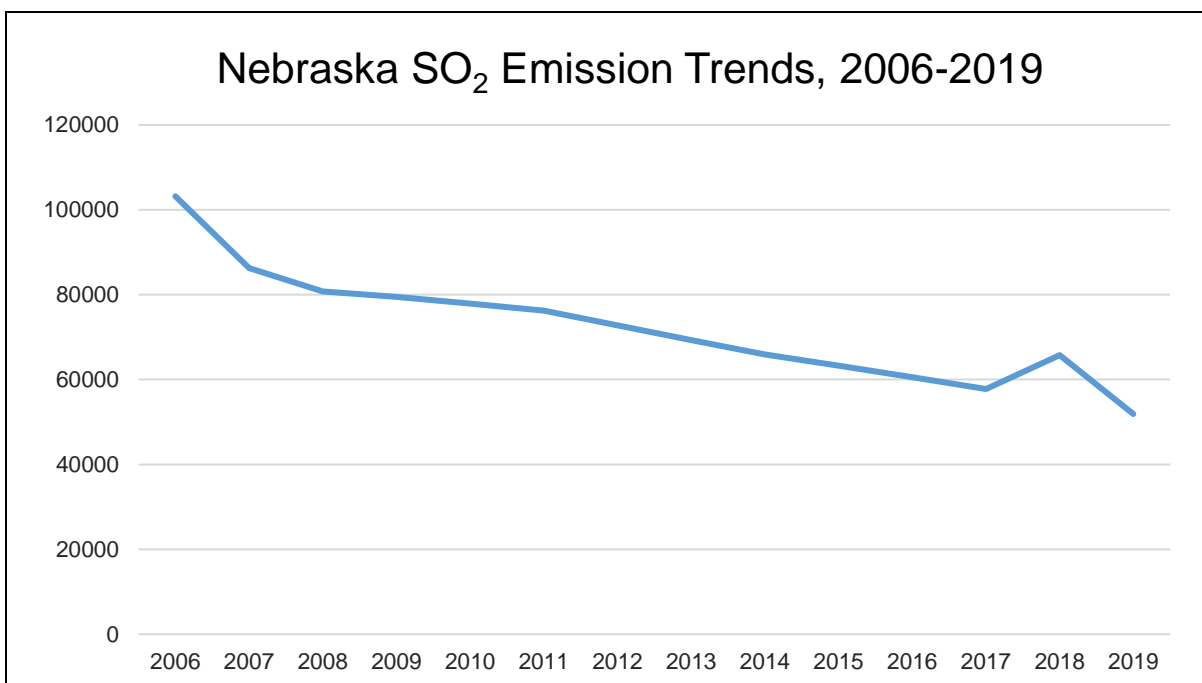


Figure 8. Nebraska SO₂ Emission Trends, 2006-2019

Source: EPA Air Pollutant Emissions Trends Data

<https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

The majority of SO₂ emissions in Nebraska are attributed to electric utility fuel combustion, representing 86.9% of total state SO₂ emissions (2019). Other categories with significant SO₂ contributions include industrial fuel combustion and other industrial processes. Together, emissions from these three source categories comprised 96.6% of Nebraska's total SO₂ emissions in 2019 (**Table 1**, page 19).

Many of the 2019 values listed in **Table 1** are unchanged from 2017 because emissions data from certain source categories are only reported during years in which EPA conducts its National Emissions Inventory (NEI). The most recent NEIs were conducted in 2014 and 2017, and the next is in 2020. Other reasons for unchanged values include those noted below:

- 2017 NEI emissions data was used for states whose emissions data was not available through the Clean Air Markets Division (CAMD); and
- 2023 mobile source data was used to interpolate mobile emissions for 2019.

Table 1. Nebraska SO₂ Emissions (tons)			
Source Category	2014	2017	2019
Fuel Combustion - Electric Utility	61,889.3	50,883.8	45,068.1
Fuel Combustion - Industrial	475.6	3,657.1	3,657.1
Fuel Combustion - Other	129.1	80.0	80.0
Chemical & Allied Product Manufacturing	2.0	1.0	1.0
Metals Processing	0.6	0.02	0.02
Petroleum & Related Industries	12.2	12.4	12.4
Other Industrial Processes	1,950.9	1,428.9	1,428.9
Solvent Utilization	0.9	0.001	0.001
Storage & Transport	2.3	0.03	0.03
Waste Disposal & Recycling	277.8	283.0	283.0
Highway Vehicles	188.4	171.1	78.9
Off-Highway	175.8	178.6	181.5
Miscellaneous	17.4	155.1	155.1
Wildfires	116.7	9.7	9.7
Prescribed Fires	664.1	930.2	930.2
TOTAL	65,903	57,791	51,886

Source: EPA Air Pollutant Emissions Trends Data, <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

Nebraska has seven significant sources of SO₂ emissions located within 50 km of the state border. Each of these sources emit more than 100 tons per year (tpy) of SO₂ annually, and are listed in **Table 2** (page 20) with facility emissions data for the years 2014, 2017, and 2019.

Overall annual SO₂ emissions from these facilities decreased by 16.8% (5,251 tons) between 2014 and 2017. Emissions inventory data for 2019⁵ from these sources indicate a 41.4% reduction in SO₂ emissions since 2014. Further discussion and analysis of the sources listed in **Table 2** are provided in this SIP document.

NOTE: The spatial scale utilized for the analysis of SO₂ transport in this demonstration is the “urban scale” (4-50 km), used by EPA to evaluate numerous 2010 1-Hour SO₂ Transport SIPs. This is considered an appropriate area in which SO₂ impacts could be reasonably expected to occur.

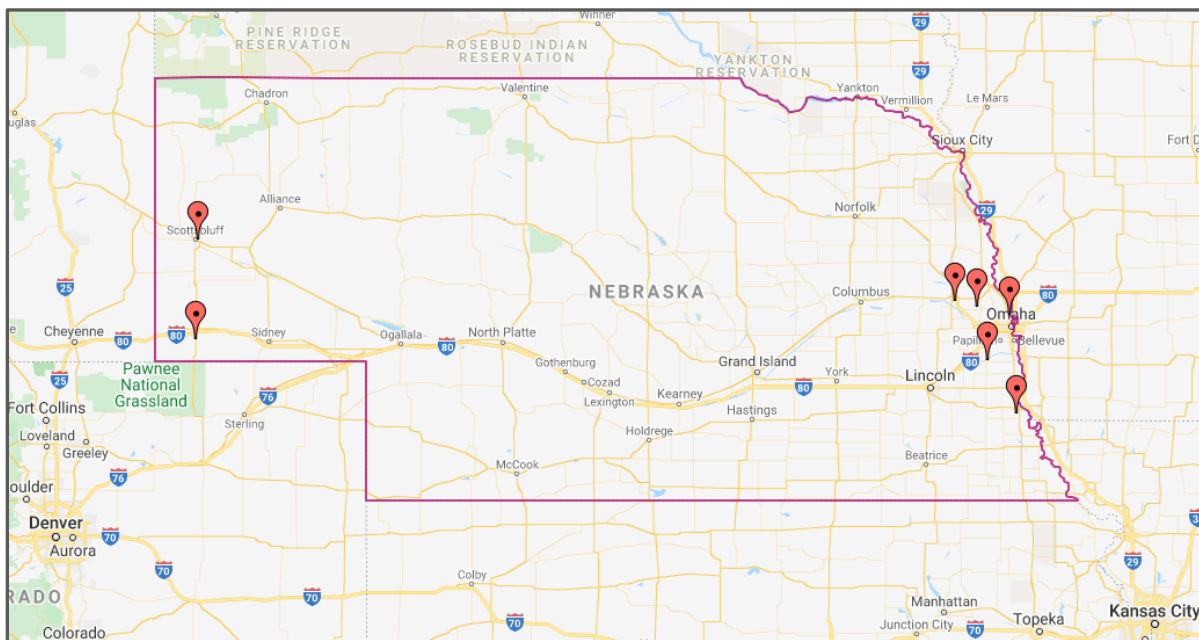
⁵ State Emissions Inventories (<https://ecmp.nebraska.gov/publicaccess/viewer.aspx?&MyQueryID=340>), EPA Air Markets Program Data (<https://ampd.epa.gov/ampd/>)

Table 2. Nebraska SO₂ Emission Sources (>100tpy) within 50 km of State Borders

Source	Location		Emissions (tons)			Percent Change from 2014
	County	City	2014	2017	2019	
Nebraska City Station	Otoe	Nebraska City	16,134	15,950	10,387	-35.6%
North Omaha Station	Douglas	Omaha	11,245	7,897	5,793	-48.5%
Ash Grove Cement	Cass	Louisville	1,251	804	681	-45.6%
Lon D Wright	Dodge	Fremont	2,232	926	985	-55.9%
Clean Harbors Environmental Services	Kimball	Kimball	223	221	206	-7.6%
Western Sugar	Scotts Bluff	Scottsbluff	149	157	145	-2.7%
Douglas County Recycling Landfill	Douglas	Bennington	103	131	165	60.2%
TOTAL			31,337	26,086	18,362	-41.4%

Source: State Emissions Inventories (<https://ecmp.nebraska.gov/publicaccess/viewer.aspx?&MyQueryID=340>), EPA Air Markets Program Data (<https://ampd.epa.gov/ampd/>)

The map in **Figure 9** shows the locations of significant sources in Nebraska within 50 km of the border.

**Figure 9. Nebraska SO₂ Sources (>100 tpy) Within 50 km of the State Border**

Source: Created at ZeeMaps www.zeemaps.com

Regarding the forthcoming discussion of Nebraska power plants, it is important to note that Nebraska is a “public power” state entirely served by consumer-owned public power entities. These entities are organized by districts, cooperatives, and municipalities.

The Power Review Board, a state agency created in 1963, regulates Nebraska’s electrical utility industry. Its duties and responsibilities are described in the Nebraska Revised Statutes, Title 70, Article 10, §70-1001 through §70-1027. These responsibilities include creation and certification of retail and wholesale service area agreements between electric utilities in the state, approval of construction of new electric generating facilities, and construction or acquisition of transmission lines or related facilities carrying more than 700 volts (unless within a supplier’s own certified service area).

Locally elected utility boards have governing authority within utility entities, which include full authority for directing the construction of new generation facilities, retirement and decommission of older facilities; and determining rates. Coordination between these boards and the Power Review Board is how approval is gained for projects to ensure there is no overlap or redundancy of resources across the state. The locally elected boards vote on and put forth resolutions, which are considered official and binding documents that direct the associated utility entities to decommission or retire units, convert to alternative fuels, and other such actions. One such resolution is referenced in this document within the discussion of emissions trends for North Omaha Station, and is included as **Appendix 3**.

1) Nebraska City Station (NCS) (Otoe County) – Facility ID 58343

This source is a coal-fired electric generating unit (EGU) located in Otoe County and operated by Omaha Public Power District (OPPD). It is approximately 1 km from the Iowa border and 66 km south of the nearest adjacent state source, Walter Scott Jr. Energy Center (Pottawattamie County, IA). **Figure 10** shows the locations of NCS (red marker), Walter Scott Jr. Energy Center (green marker), and Omaha SO₂ monitors (blue markers).

NCS operates two coal-fired units, one of which (Unit 2) is fitted with a dry flue gas desulfurization (scrubber) system to control SO₂ emissions. Sulfur dioxide emissions at NCS decreased by 1.1% during the period 2014-2017, and 2019 emission inventory totals submitted to the agency indicate an overall 35.6% decrease since 2014.

Both Units 1 and 2 at NCS are subject to CSAPR and participate in the CSAPR Group 2 Trading program with total SO₂ allocations⁶ of 15,690 tons per year.

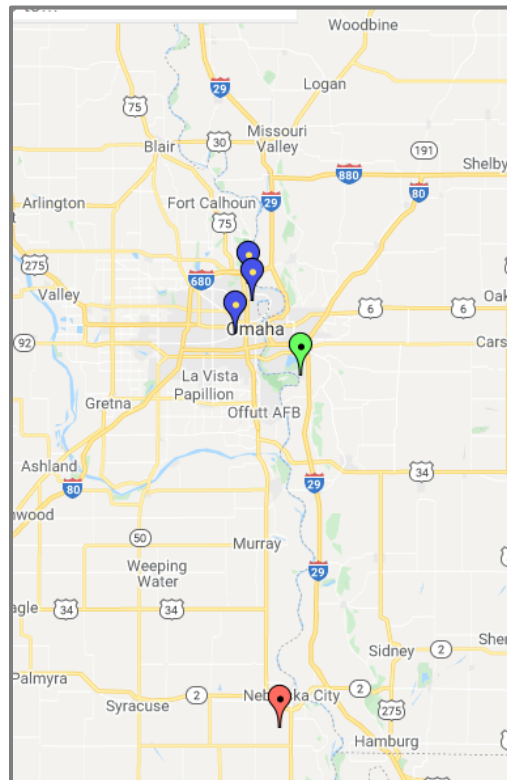


Figure 10. NCS – Walter Scott – Omaha SO₂ Monitors

Source: Created at ZeeMaps www.zee maps.com

A modeling analysis was completed for this area in 2015⁷ and submitted to EPA as part of Nebraska's Round 2 designation recommendations on September 18, 2015. The modeling domain extended into Iowa, although no Iowa sources or monitors were located within the domain or area of impact. Modeling results indicated the largest modeled concentration from the facility (both units) was 78.5 µg/m³, or 40% of the NAAQS. The point of highest impact is located approximately 10 km north of the plant, and modeling showed no interference with attainment or maintenance of the NAAQS in Iowa or Nebraska. The monitors nearest to this source are located in Omaha (NCORE, Whitmore, and North Omaha Station monitors) approximately 71, 75, and 80 km from NCS, respectively. Otoe County was designated "Unclassifiable/Attainment" by EPA on September 12, 2016 (81 FR 45039).

The windrose for Nebraska City (**Figure 11**, page 23) indicates a predominantly south-north/northwest wind pattern, which would facilitate impacts at the Omaha SO₂ monitors, although all are more than 50 km from the source. Design values for these monitors do not exceed 55% of the NAAQS (see **Table 6**, page 46), indicating that significant contribution from NCS to the Omaha monitors or the area surrounding Walter Scott Jr. Energy Center is unlikely.

⁶ Unit Level Allocations under the CSAPR (Transport Rule) FIPs after tolling <https://www.epa.gov/csapr/unit-level-allocations-under-csapr-transport-rule-fips-after-tolling>

⁷ NE Nebraska City Station SO₂ Modeling <https://www.regulations.gov/document?D=EPA-HQ-OAR-2014-0464-0091>

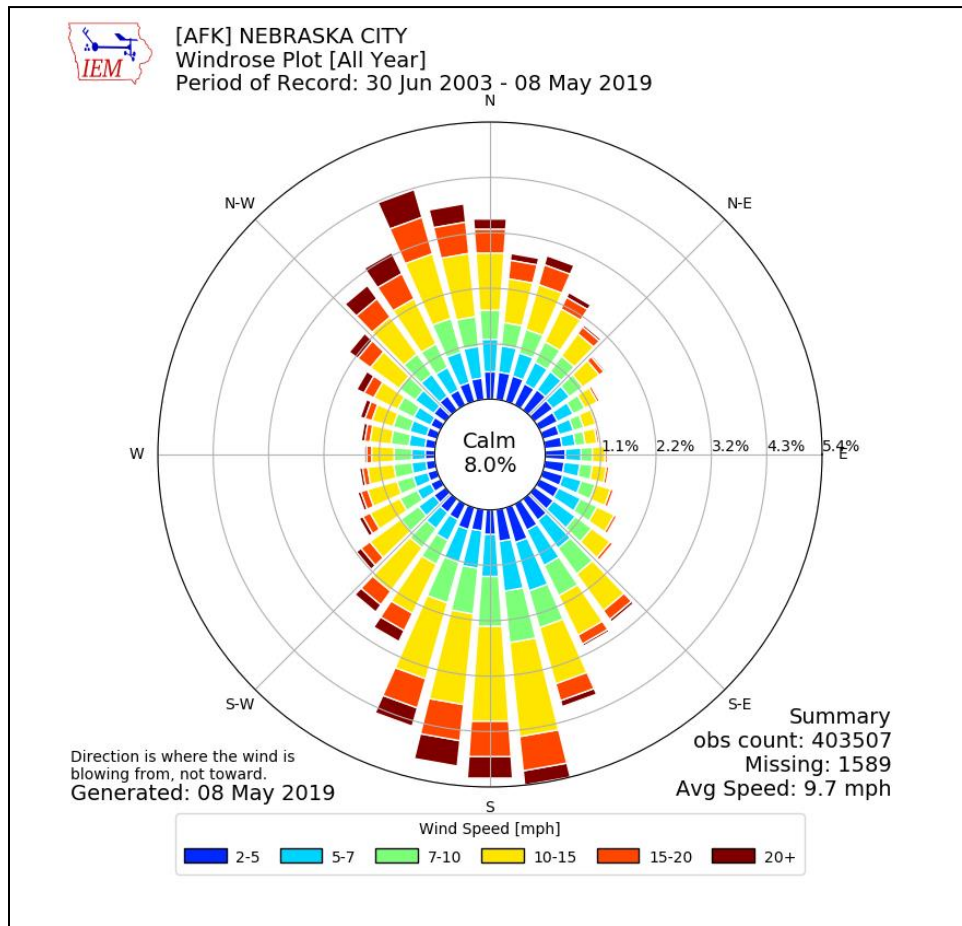


Figure 11. Windrose for Nebraska City, Nebraska

Source: Iowa State University Environmental Mesonet

https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=NE_ASOS&station=AFK

Based on the information provided, NDEE asserts that SO₂ emissions from Nebraska City Station do not impact the neighboring state of Iowa.

2) North Omaha Station (Douglas County) – Facility ID 59763

This source is a coal-fired EGU operated by OPPD, and located in Douglas County approximately 0.5 km from the Nebraska-Iowa border. It is approximately 20 km from the nearest adjacent state source, Walter Scott Jr. Energy Center (Pottawattamie County, IA). The map in **Figure 12** shows the locations of North Omaha Station (red marker), Walter Scott Jr. Energy Center (green marker), and the Omaha SO₂ monitors (blue markers). The blue marker nearest the red marker (North Omaha Station) indicates the location of the source-oriented monitor installed pursuant to the DRR.

North Omaha Station currently operates two coal-fired units, using low-sulfur coal; these units are to be converted to natural gas by 2023⁸. Three coal-fired units were retired in 2016⁷ which resulted in a significant SO₂ emissions decrease in that year. Overall SO₂ emissions from this EGU decreased by 29.8% during the period 2014-2017, and 2019 emission inventory totals provided to the agency indicate an overall 48.5% decrease since 2014.

This EGU participates in the CSAPR Group 2 Trading Program, and its annual SO₂ allocations⁹ are 5,709 tons.

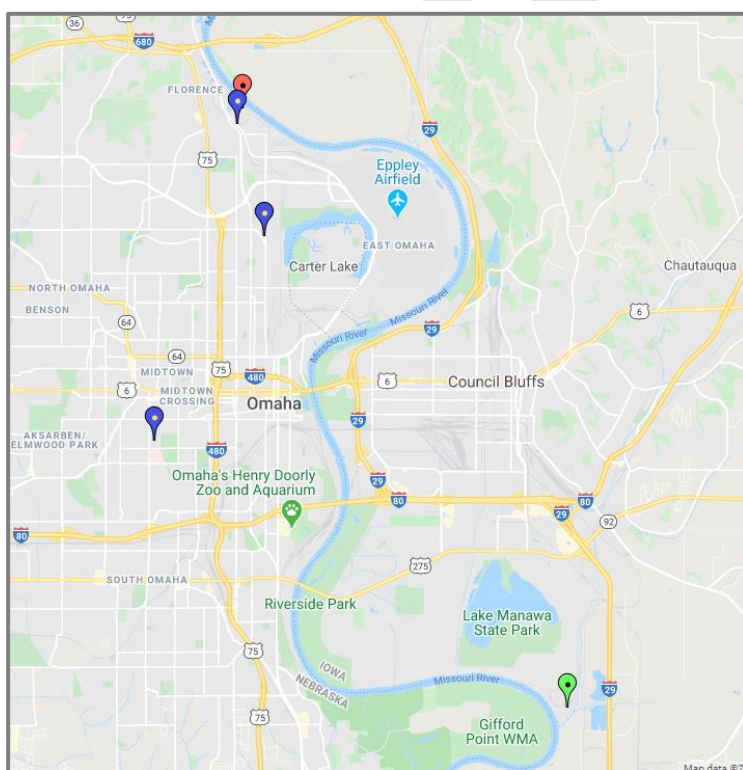


Figure 12. North Omaha Station – Walter Scott Jr. Energy Center – Omaha SO₂ Monitors

Source: Created at ZeeMaps www.zeemaps.com

⁸ Omaha Public Power District Board of Directors, Resolution No. 6006, June 17, 2014 (Appendix 3)

⁹ Unit Level Allocations under the CSAPR (Transport Rule) FIPs after tolling <https://www.epa.gov/csapr/unit-level-allocations-under-csapr-transport-rule-fips-after-tolling>

North Omaha Station was included in Iowa's 2016 modeling demonstration¹⁰ used to support its recommended designation for the 2010 1-Hour SO₂ NAAQS for Pottawattamie County, IA. The modeling analysis showed no interference with attainment or maintenance of the NAAQS in Iowa due to emissions from North Omaha Station. Modeling indicated a maximum impact of 134 µg/m³ (68% of the NAAQS), and Pottawattamie County, IA, was designated by EPA as "Attainment/Unclassifiable" on January 9, 2018 (83 FR 1098).

Source-oriented monitoring was conducted at the area of greatest anticipated impact from North Omaha Station from 2017 through 2019 pursuant to 2010 1-Hour SO₂ NAAQS DRR, and the three-year DV (2017-2019) is 45% of the NAAQS (see **Table 6**, page 46). EPA is proposing to designate this area (Douglas County) as "Attainment/Unclassifiable" (see **Appendix 2**).

The windrose in **Figure 13** for Omaha/Eppley Airfield shows a predominantly south/southeast-north/northwest wind pattern, which could facilitate impacts on Walter Scott Jr. Energy Center. However, DVs for the Omaha SO₂ monitors do not exceed 55% of the NAAQS, indicating that significant contribution from North Omaha Station to these monitors or the area surrounding Walter Scott Jr. Energy Center is unlikely.

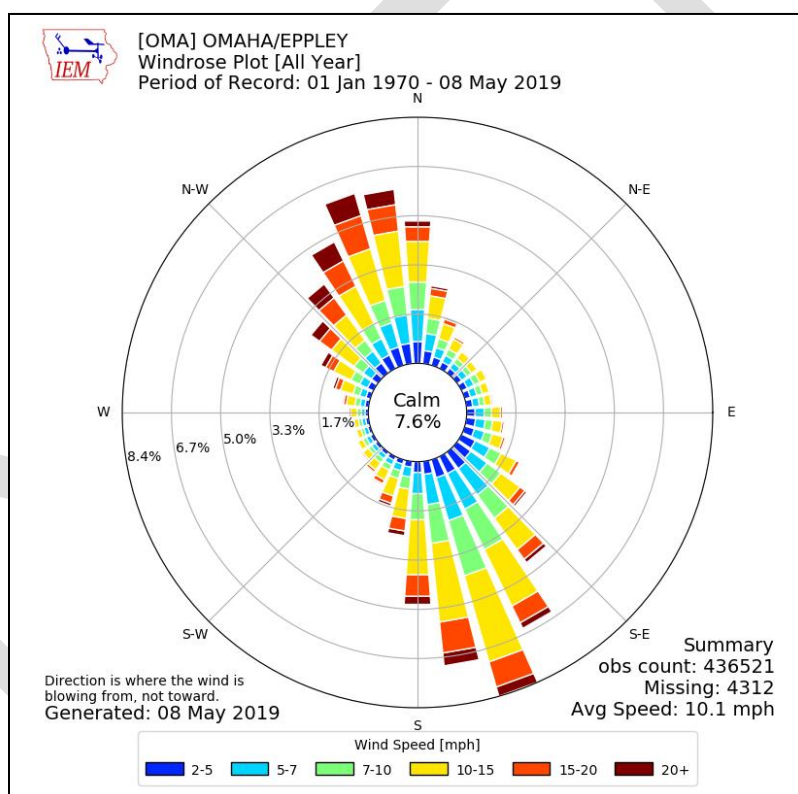


Figure 13. Windrose for Omaha, Nebraska

Source: Iowa State University Environmental Mesonet

https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=NE_ASOS&station=AFK

Based on the information provided, NDEE asserts that SO₂ emissions from North Omaha Station do not impact the neighboring state of Iowa.

¹⁰ Data Requirements Rule and Iowa's Round 3 Designations Technical Support Document for the 2010 SO₂ NAAQS <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/Implementation-Plans>

3) Ash Grove Cement Company (Cass County) – Facility ID 4129

This source is a cement manufacturer in Cass County, NE, approximately 28 km from the Iowa border and 33 km from Walter Scott Jr. Energy Center (Pottawattamie County, IA). The Ash Grove facility was not included in the modeling analysis completed by Iowa Department of Natural Resources (DNR) in 2016.

The map in **Figure 14** shows the locations of Ash Grove (red marker), Walter Scott Jr. Energy Center (green marker), and the Omaha SO₂ monitors (blue markers).

Sulfur dioxide emissions from this source are attributed to two kilns, and those emissions decreased by 35.7% during the period 2014-2017. The 2019 emission inventory totals submitted to the agency indicate an overall 45.6% decrease since 2014.

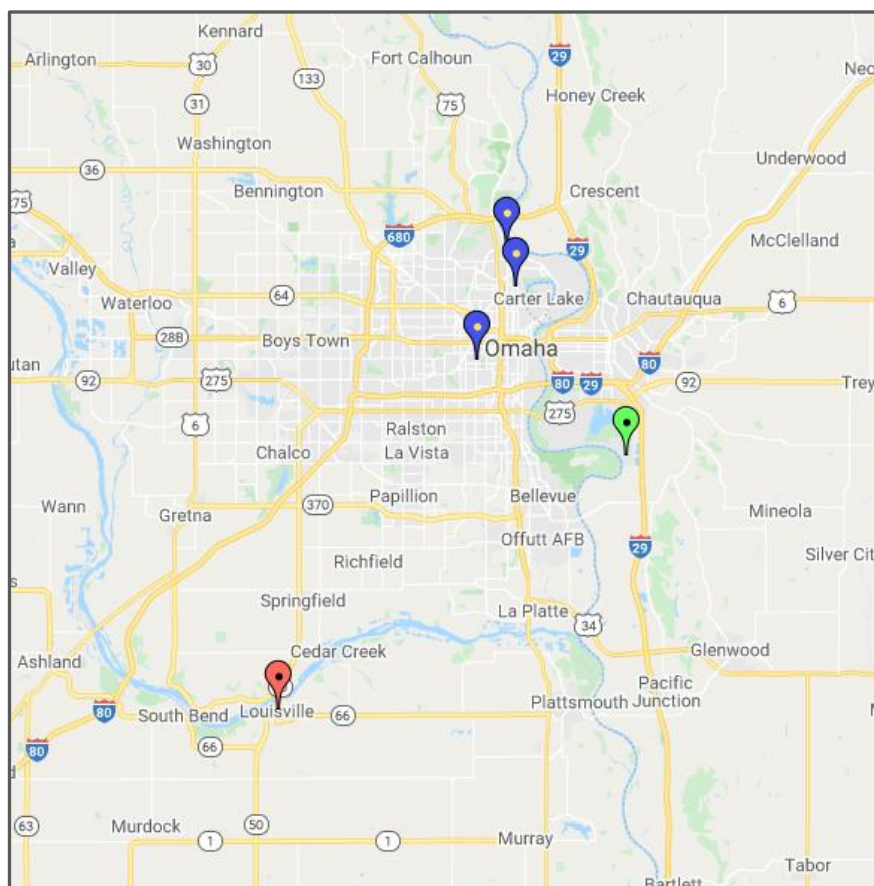


Figure 14. Ash Grove Cement – Walter Scott Jr. Energy Center

Source: Created at ZeeMaps www.zeemaps.com

This source is located approximately 32 km southwest of the Omaha NCORE monitor. The windrose (**Figure 15**, page 27) for the nearest weather station (Plattsmouth, NE, approximately 23 km due east of the source), shows a predominantly southeast-northwest wind direction. Design values for the Omaha SO₂ monitors do not exceed 55% of the NAAQS and, given the source location and predominant wind direction, significant contribution to these monitors from the source is unlikely.

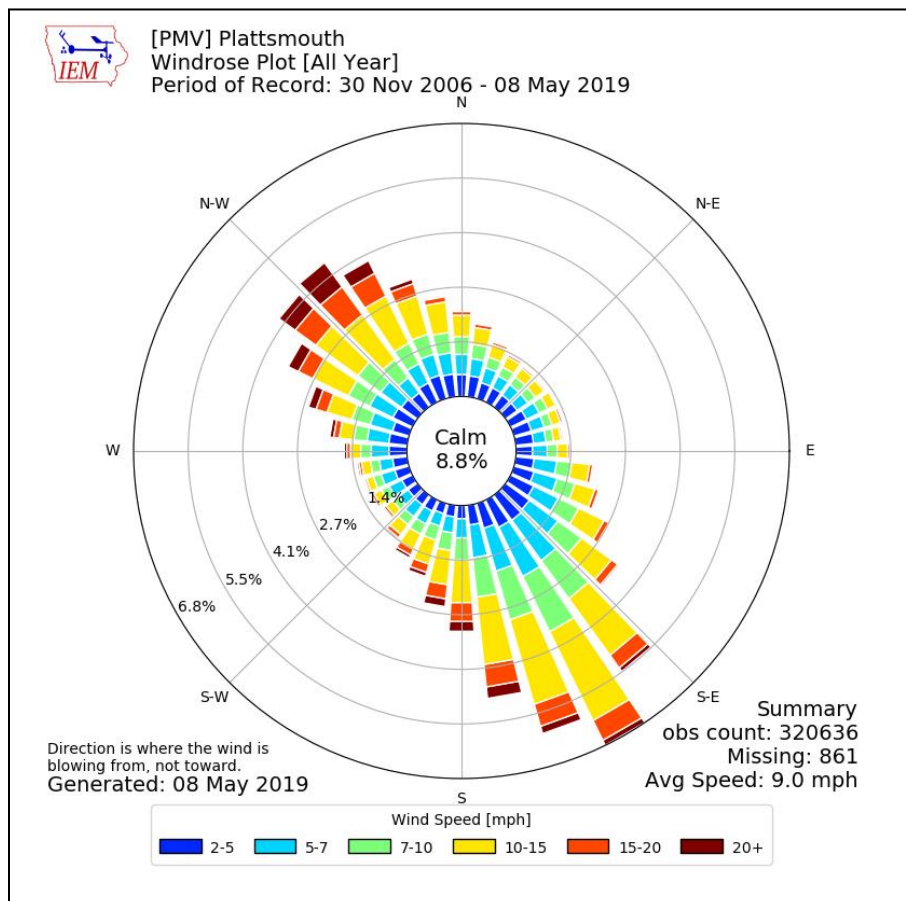


Figure 15. Windrose for Plattsmouth, Nebraska

Source: Iowa State University Environmental Mesonet

https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=NE_ASOS&station=AFK

Based on the information provided, NDEE asserts that SO₂ emissions from Ash Grove Cement Company do not impact the neighboring state of Iowa.

4) Lon D Wright Power Plant (Dodge County) – Facility ID 48518

This source is a coal-fired EGU operated by Fremont Department of Utilities. It is located in Dodge County, NE, approximately 40 km from the Iowa border and 59 km from Walter Scott Jr. Energy Center in Iowa. The Lon D Wright facility was not included in the modeling analysis completed by the Iowa DNR in 2016.

The map in **Figure 16** shows the locations of Lon D Wright Power Plant (red marker), Walter Scott Jr. Energy Center (green marker), and Omaha SO₂ monitors (blue markers).

Three units are currently in operation at this facility: one which operates using coal as the primary fuel, and two additional units using coal as a backup fuel. Sulfur dioxide emissions from this EGU decreased by 58.5% during the period 2014-2017, and 2019 emission inventory totals submitted to the agency indicate an overall 55.9% decrease since 2014.

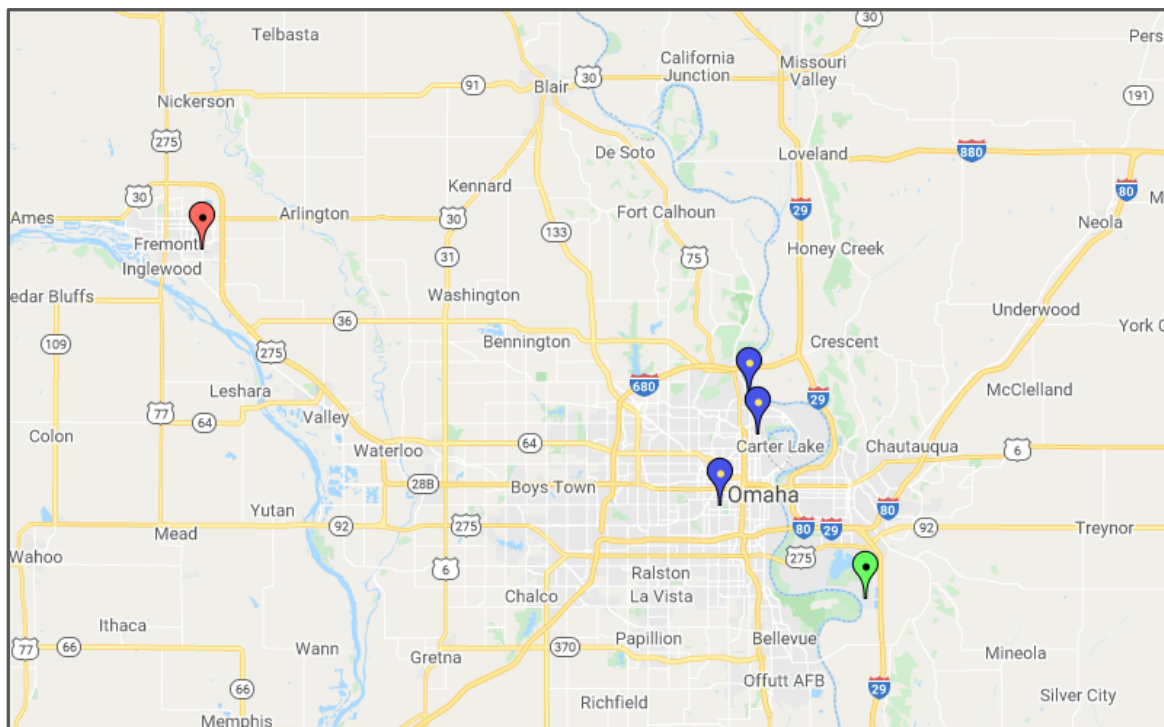


Figure 16. Lon D Wright – Walter Scott Jr. Energy Center – Omaha SO₂ Monitors

Source: Created at ZeeMaps www.zeemaps.com

This source is approximately 45 km northwest of the Omaha NCORE monitor and the windrose in **Figure 17** (page 29) shows a predominantly southeast-northwest wind pattern. Design values for the Omaha SO₂ monitors do not exceed 55% of the NAAQS, indicating that significant contribution to these monitors from the source is unlikely.

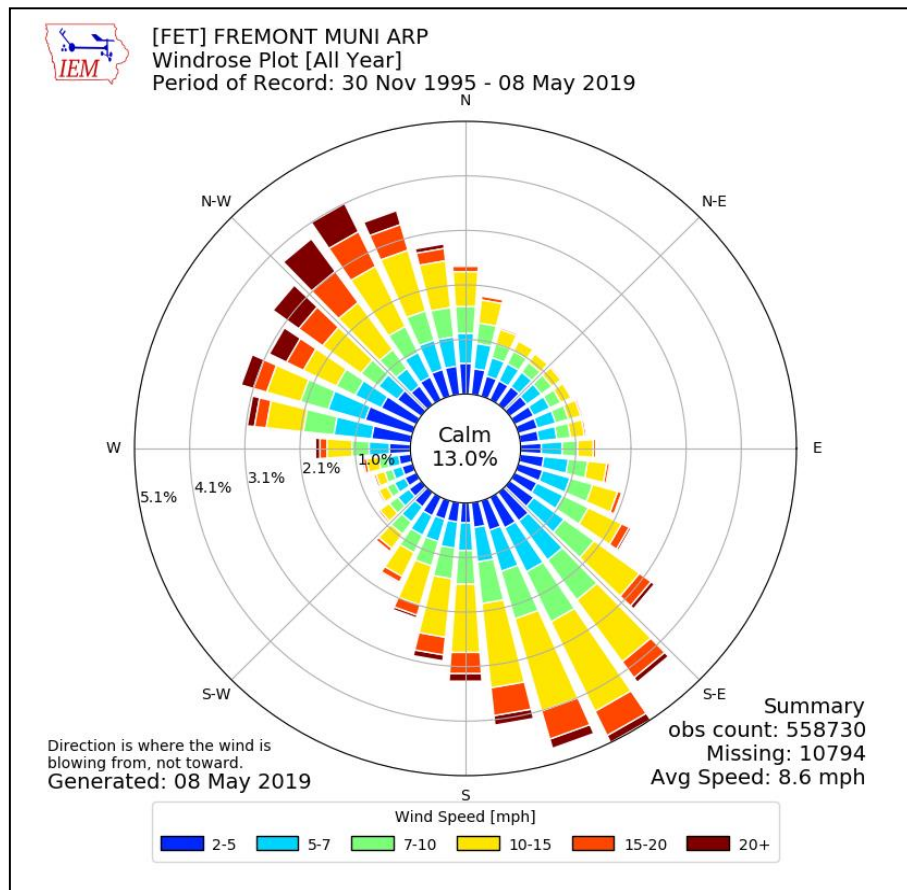


Figure 17. Windrose for Fremont, Nebraska

Source: Iowa State University Environmental Mesonet

https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=NE_ASOS&station=AFK

Based on the information provided, NDEE asserts that SO₂ emissions from Lon D. Wright Power Plant do not impact the neighboring state of Iowa.

5) Clean Harbors Environmental Services (Kimball County) – Facility ID 58562

This source is located in Kimball County, NE, approximately 30 km from the Wyoming border and 20 km from the Colorado border. The nearest adjacent state source is approximately 95 km from this facility. There are no significant sources of SO₂ in Colorado or Wyoming within 50 km of the Nebraska panhandle border. The distance between this source and the border of South Dakota is beyond the spatial scale (50 km) used for this analysis.

Clean Harbors provides environmental services such as hazardous waste management, emergency spill response, and recycling services. Its SO₂ emissions are primarily attributed to a thermal oxidizer unit for ash removal and letdown. Sulfur dioxide emissions from this source decreased slightly during the period 2014-2017, and 2019 emission inventory totals submitted to the agency indicate an overall 7.6% decrease since 2014.

The map in **Figure 18** shows the location of Clean Harbors (red marker) and the nearest SO₂ monitor (blue marker), which is the Cheyenne NCORE monitor (Cheyenne, WY – AQS ID 5-021-0100). This monitor is located approximately 94 km slightly northwest of the source, beyond the spatial scale of 50 km utilized in this analysis.

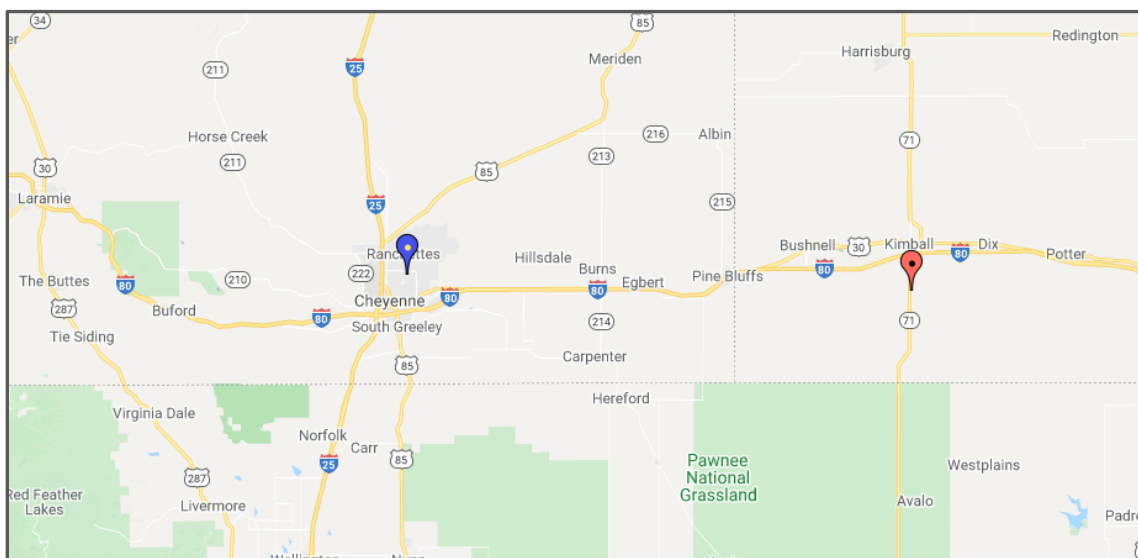


Figure 18. Clean Harbors Environmental Services – Cheyenne NCORE Monitor

Source: Created at ZeeMaps www.zeemaps.com

The windrose for Kimball, NE, in **Figure 19** (page 31) shows a predominantly northwest wind direction. Design values for this monitor are well below the NAAQS, with the most recent (2017-2019)¹¹ preliminary DV of 5 µg/m³ (7% of the NAAQS). Given the source location and distance from the monitor, predominant wind direction, and low DVs for the Cheyenne NCORE monitor, significant contribution to this monitor from the source is unlikely.

¹¹ EPA Air Quality System, Preliminary Design Value Report <https://www.epa.gov/aqs>

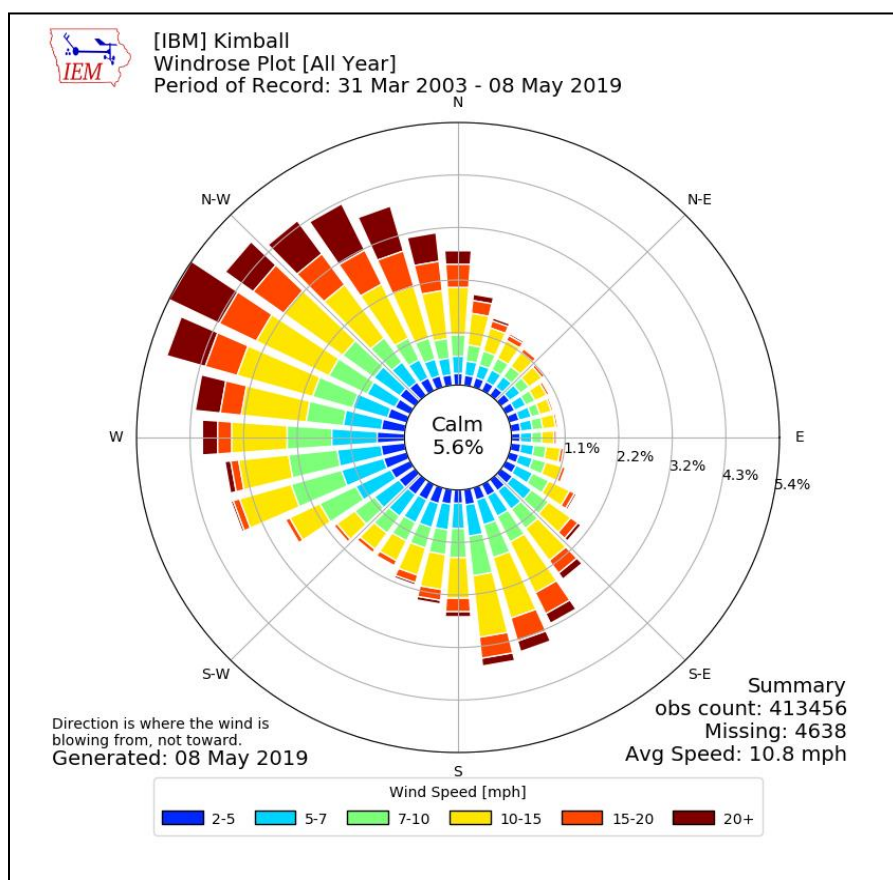


Figure 19. Windrose for Kimball, Nebraska

Source: Iowa State University Environmental Mesonet

https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=NE_ASOS&station=AFK

Based on the information provided, NDEE asserts that SO₂ emissions from Clean Harbors Environmental Service do not impact the neighboring states of Wyoming, Colorado, and South Dakota.

6) Western Sugar Cooperative (Scotts Bluff County) – Facility ID 44141

This source is located in Scotts Bluff County, NE, approximately 30 km from the Wyoming border. There are no significant sources of SO₂ in Wyoming within 50 km of the Nebraska western panhandle border. The distance between this source and the borders of South Dakota and Colorado are beyond the spatial scale (50 km) used for this analysis.

Western Sugar is a beet sugar manufacturing facility, and its SO₂ emissions are primarily attributed to two coal-fired boilers. Sulfur dioxide emissions from this EGU increased slightly during the period 2014-2017, and 2019 emission inventory totals submitted to the agency indicate an overall 2.7% decrease since 2014. In a Consent Decree (**Appendix 4**) issued on April 16, 2019, Western Sugar was ordered to decommission the coal-fired boilers currently in use and replace them with natural gas-fired boilers to be operational by September 30, 2023. On November 26, 2019, this source notified NDEE of its determination that a state construction permit was required for this project, pursuant to the Consent Decree. The next required action on the part of the source, is submission of a construction permit application to the agency no later than December 31, 2020.

The map in **Figure 20** shows the location of Western Sugar Cooperative (red marker) and the nearest SO₂ monitor (blue marker) in Cheyenne, WY (Cheyenne NCORE – AQS ID 5-021-0100). This monitor is located approximately 121 km southwest of the source, which is beyond the spatial scale of 50 km utilized in this analysis.

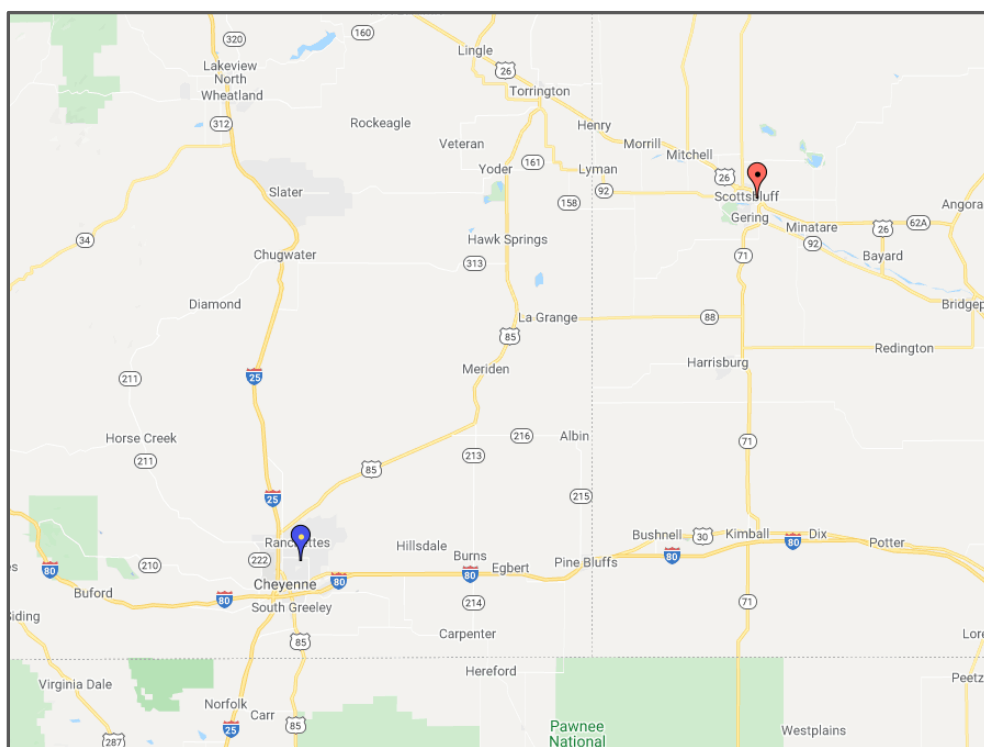


Figure 20. Western Sugar Cooperative – Cheyenne NCORE Monitor

Source: Created at ZeeMaps www.zeemaps.com

The windrose for Scottsbluff, NE (**Figure 21**) shows a predominantly west-northwest wind direction. Design values for this monitor are well below the NAAQS, with the most recent (2017-2019)¹² preliminary DV of 5 µg/m³ (7% of the NAAQS). Given the source location and distance from the monitor, predominant wind direction, and low DVs for the Cheyenne NCORE monitor, significant contribution to this monitor from the source is unlikely.

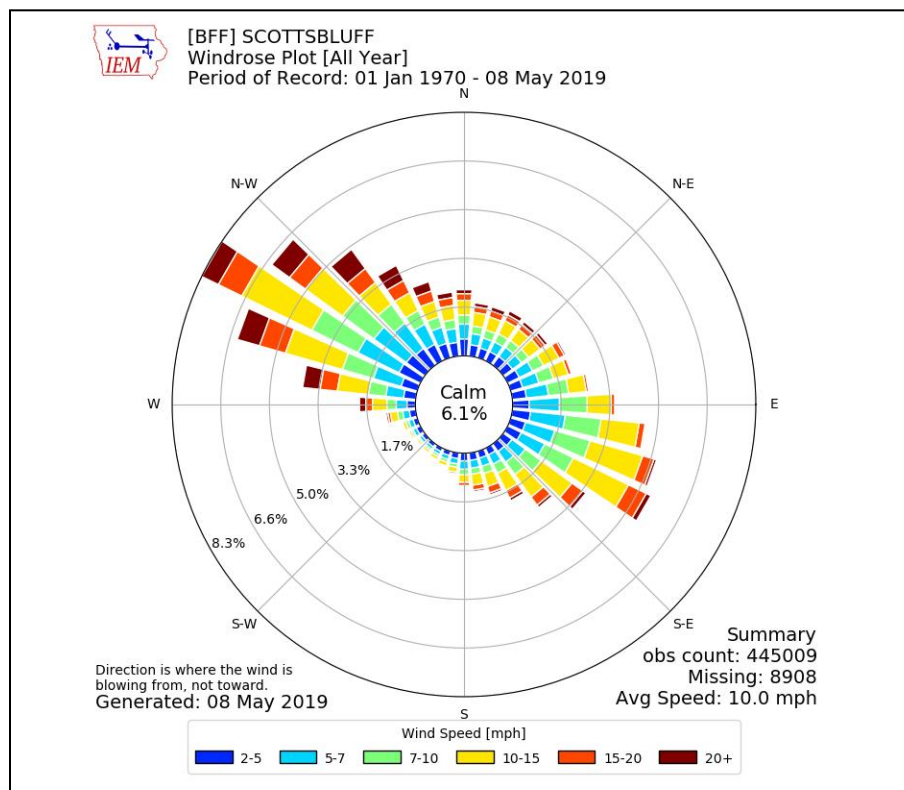


Figure 21. Windrose for Scottsbluff, Nebraska

Source: Iowa State University Environmental Mesonet

https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=NE_ASOS&station=AFK

Based on the information provided, NDEE asserts that SO₂ emissions from Western Sugar Cooperative do not impact the neighboring state of Wyoming, Colorado, or South Dakota.

¹² EPA Air Quality System, Preliminary Design Value Report <https://www.epa.gov/aqs>

7) Douglas County Recycling Landfill (Douglas County) – Facility ID 62593

This source is located in Douglas County, northwest of Omaha, and is operated by Douglas County Environmental Services. It is approximately 20 km from the Iowa border and 44 km from Walter Scott Jr. Energy Center in Iowa, however it was not included in the modeling analysis completed by the Iowa DNR in 2016.

This source is located approximately 25 km west/northwest of the Omaha NCORE monitor. The map below (**Figure 22**) shows the locations of the Douglas County Recycling Landfill (red marker), Walter Scott Jr. Energy Center (green marker), and the Omaha SO₂ monitors (blue markers).

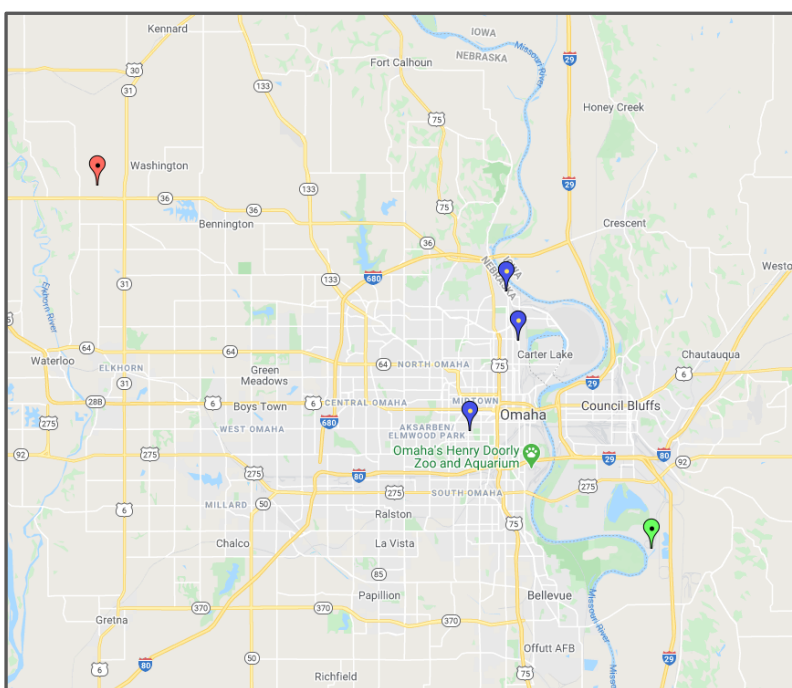


Figure 22. Douglas County Landfill – Walter Scott Jr. Energy Center – Omaha SO₂ Monitors

Source: Created at ZeeMaps www.zeemaps.com

This facility is comprised of two solid waste landfill areas: one in operation from 1989-2003, and a second (Pheasant Point) that opened in 2003 and is presently accepting waste. Key equipment used at the landfill includes

- An energy plant, comprised of eight reciprocating internal combustion engines (RICE),
- A leachate evaporation system, and
- A landfill gas open flare.

When landfill waste decomposes, gas is produced. The amount of gas produced depends on the moisture content, waste composition, and amount of organic material present in the waste. The majority of the landfill gas is routed to the energy plant, with a smaller amount to the

evaporation system and flare. As gas generation decreases at older portions of the landfill, the gas generated in newer portions increases, and eventually the flow rate will plateau. When additional extraction wells are added to expand the landfill, the flow rate will increase as new waste decomposes.

Since 2014, SO₂ emissions from the energy plant have remained fairly consistent, and the emissions increase is attributed to the open flare. Upward trends are noted for the operating hours, gas throughput, and gas flow rate to the flare since 2014, and from 2014-2017 facility emissions increased 27.2%. Emissions data from 2019 indicate a 60.2% increase in SO₂ emissions since 2014.

The windrose in **Figure 23** for the nearest weather station (Omaha, NE) shows a predominantly south/southeast-north/northwest wind pattern. Design values for the Omaha SO₂ monitors do not exceed 55% of the NAAQS, indicating that significant contribution to these monitors from the source is unlikely.

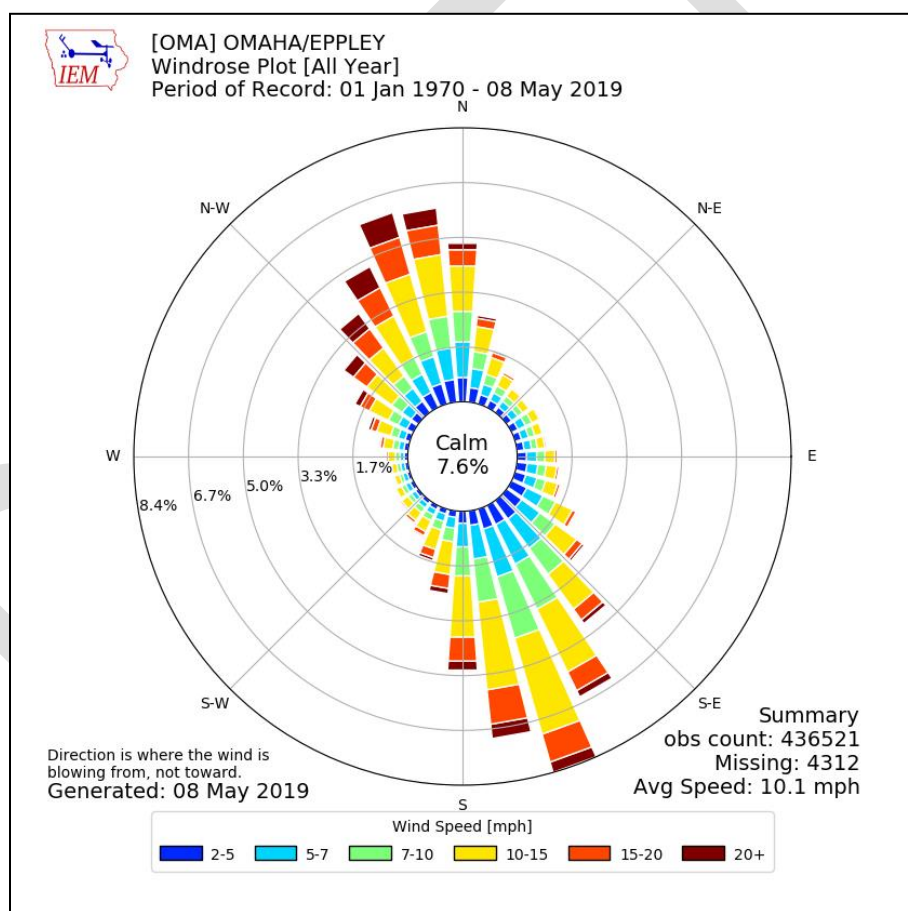


Figure 23. Windrose for Omaha, Nebraska

Source: Iowa State University Environmental Mesonet

https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=NE_ASOS&station=AFK

Based on the information provided, NDEE asserts that SO₂ emissions from the Douglas County Recycling Landfill do not impact the neighboring state of Iowa.

b. Adjacent States' Emissions and Trends

Emission trends for SO₂ (2006-2019) from states adjacent to Nebraska are shown in **Figure 24** below. All states experienced decreases in emissions, including Nebraska, over the 2006-2019 time period. Emissions data for Nebraska and adjacent states is shown in **Table 3** below.

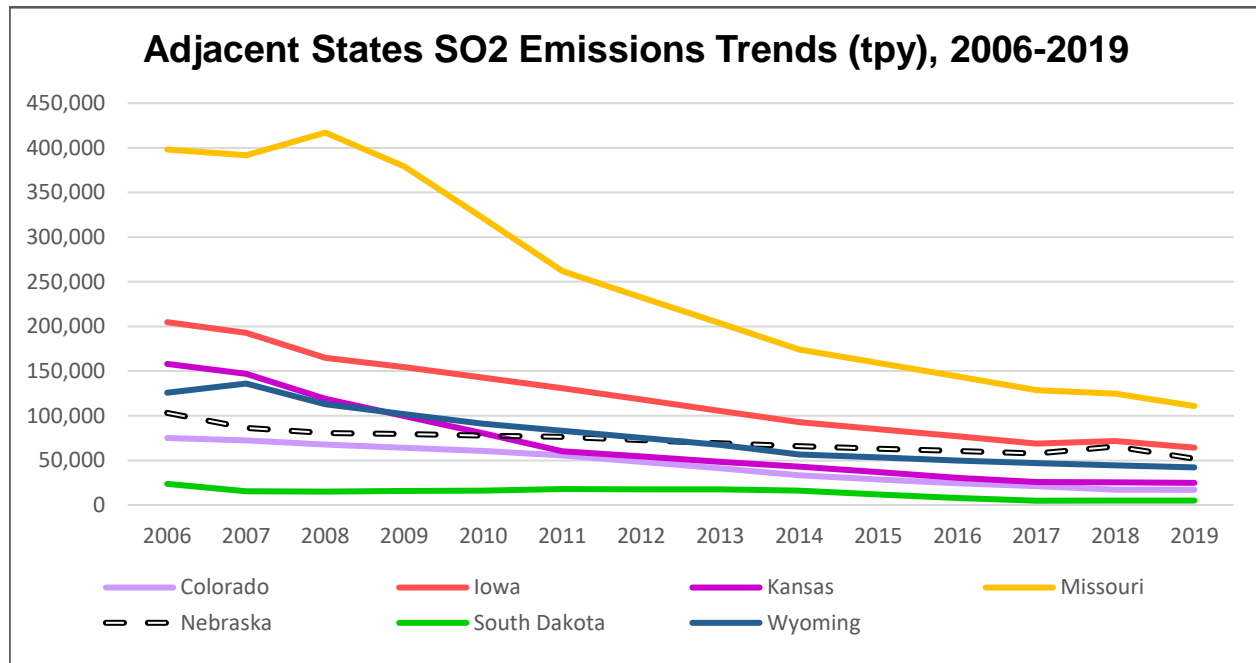


Figure 24. Adjacent States SO₂ Emission Trends, 2006-2017

Source: EPA Air Pollutant Emissions Trends Data

<https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

Table 3. Nebraska and Adjacent States' SO₂ Emissions, 2006-2019

	2006	2019	% change
Colorado	75,081	17,045	-77.3%
Iowa	204,780	64,294	-68.6%
Kansas	158,070	24,855	-84.3%
Missouri	398,173	110,888	-72.2%
South Dakota	23,753	5,093	-78.6%
Wyoming	125,898	42,191	-66.5%
Nebraska	103,188	51,886	-49.7%

Source: EPA Air Pollutant Emissions Trends Data

<https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

Table 4 lists the source categories contributing the majority of SO₂ emissions for Nebraska and adjacent states and includes the overall changes in emissions over the period 2006-2019.

Table 4. Change in SO₂ Emissions – Adjacent States 2006-2019				
Source Category	Adjacent States (combined)			NE
	2006 (tons)	2019 (tons)	% change	% change
Fuel Combustion - Electric Utility	653,979	161,778	-75.3%	-36.7%
Fuel Combustion - Industrial	148,822	45,416	-69.5%	-81.4%
Other Industrial Processes	43,246	10,561	-75.6%	-64.4%
Metal Processing	45,999	3,268	-92.9%	-99.9%
Fuel Combustion – Other	34,397	5,038	-85.4%	-87.3%
Prescribed Fires	9,497 ₍₂₀₀₈₎	21,706	129%	161%

Source: EPA Air Pollutant Emissions Trends Data

<https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

Two states adjacent to Nebraska – Iowa and Missouri – have significant sources of SO₂ within 50 km of the Nebraska border. These adjacent state source locations are shown as green markers on the map in **Figure 25**. Nebraska source locations are denoted by red markers.

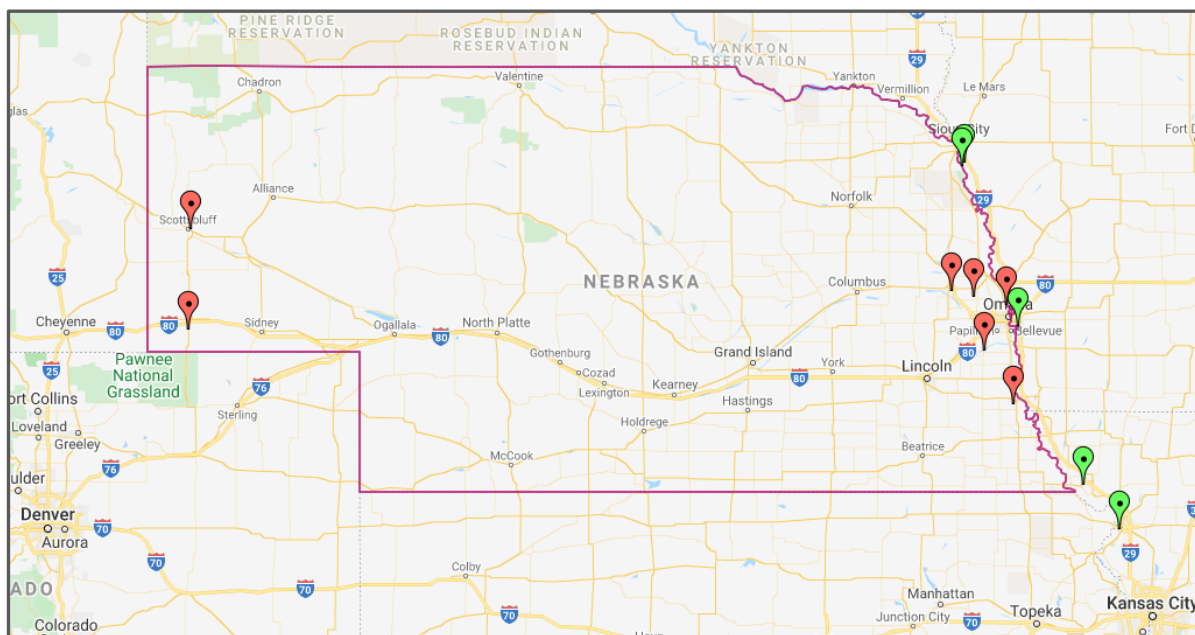


Figure 25. Adjacent States' Significant SO₂ Sources Within 50 km of the Nebraska Border

Source: Created at ZeeMaps www.zeemaps.com

Emission trends for significant sources of SO₂ from Iowa and Missouri located within 50 km of the Nebraska border are listed in **Table 5** below. More detailed discussions of these sources and potential impacts from Nebraska sources are included in the following pages.

Sulfur dioxide emissions from the adjacent state sources have decreased by an overall 35.2% over the period 2014-2017. Estimated emissions for 2019¹³ indicate an overall 47.8% decrease since 2014.

Table 5. Adjacent State SO₂ Emission Sources (>100 tpy) within 50 km of State Borders							
Source	Location			Emissions (tons)			
	State	County	City	2014	2017	2019	% change
Walter Scott Jr. Energy Center	IA	Pottawattamie	Council Bluffs	13,749	9,753	8,895	-35.3%
George Neal - North	IA	Woodbury	Salix	6,501	4,128	2,617	-59.7%
George Neal - South	IA	Woodbury	Sergeant Bluff	6,813	4,356	3,113	-54.3%
Exide Technologies - Canon Hollow	MO	Holt	Forest City	174	127	159	-8.6%
KCPL Missouri Lake Rd Generating Station	MO	Buchanan	Saint Joseph	1,112	4	7	-99.3%
TOTAL				28,349	18,368	14,791	-47.8%

Source: EPA Air Markets Program Data (<https://ampd.epa.gov/ampd/>), state emissions inventories

¹³ EPA 2019 Power Plant Emissions Data – Power Plant Emission Trends <https://www.epa.gov/airmarkets/power-plant-emission-trends>

1) Iowa Sources

Walter Scott Jr. Energy Center (WSEC) (Pottawattamie County, IA)

This coal-fired EGU is located approximately 0.2 km from the Nebraska border, and 20 km south/southeast from the nearest Nebraska source, North Omaha Station. The area surrounding this Iowa facility (Pottawattamie County) was designated “Attainment/Unclassifiable” by EPA in Round 3 of the 2010 1-Hour SO₂ NAAQS designations process.¹⁴

This designation relied on a modeling analysis, which indicated a maximum impact of 134 µg/m³ (68% of the NAAQS). The locations of Walter Scott Jr. Energy Center (green marker), North Omaha Station (red marker), and Omaha SO₂ monitors (blue markers) are shown on the map in **Figure 26**.

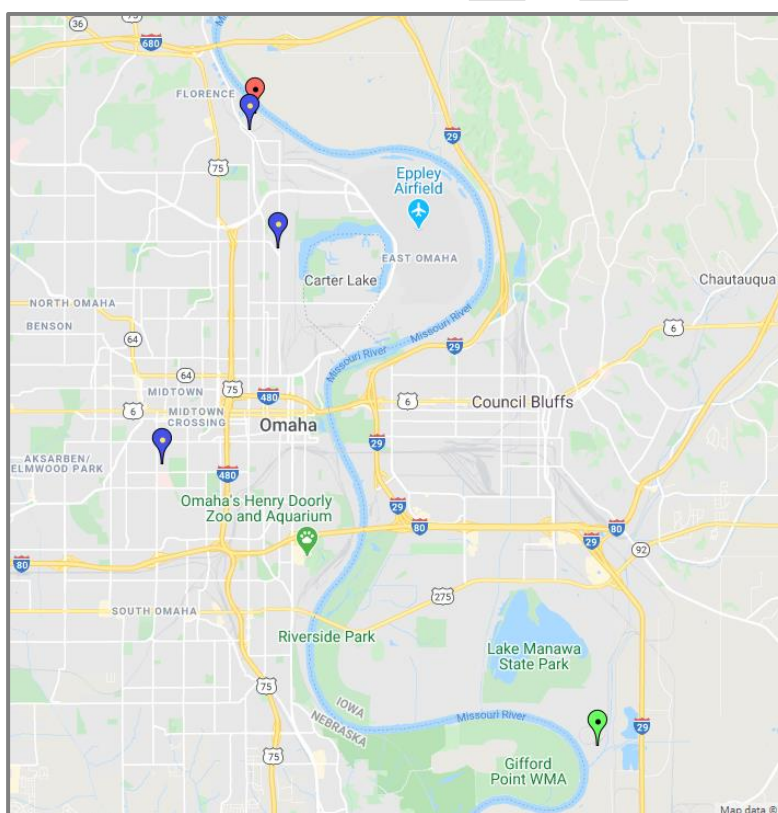


Figure 26. North Omaha Station – Walter Scott Jr. Energy Center – Omaha SO₂ Monitors

Source: Created at ZeeMaps www.zeemaps.com

Walter Scott Jr. Energy Center currently operates two coal-fired units, both of which are fitted with dry flue gas desulfurization (FGD) equipment, also known as a dry scrubber. Two coal-fired units were retired in 2016¹⁵ and emissions showed a significant decrease in 2016. Facility

¹⁴ Air Quality Designations for the 2010 Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard—Round 3, Jan 9, 2018 (83 FR 1098) <https://www.govinfo.gov/content/pkg/FR-2018-01-09/pdf/2017-28423.pdf>

¹⁵ On September 18, 2015, the Iowa Department of Natural Resources rescinded the air construction permits for Walter Scott Jr. Energy Center Units 1 and 2, permit numbers 72-A-162-S4 and 72-A-173-P3, respectively. Units 1 and 2 are therefore prohibited from operating.

emissions decreased by 29.1% during the period 2014-2017. Emissions from 2019¹⁶ indicate an overall 35.3% decrease since 2014.

Modeling conducted in 2016¹⁷ supported Iowa's recommended designation for the 2010 1-Hour SO₂ NAAQS for Pottawattamie County, IA. Potential contributions from North Omaha Station were considered in the modeling analysis, and results indicated the highest predicted 3-year average 99th percentile 1-hour average concentration of 134 µg/m³ (68% of the NAAQS). The source-specific monitor near North Omaha Station has a DV (2017-2019) of 45% of the NAAQS, indicating that significant contribution to air quality in Pottawattamie County, IA is unlikely.

The Omaha-Council Bluffs Metropolitan Statistical Area (MSA) includes two SO₂ monitoring sites (NCORE and Whitmore monitors) to satisfy CAA requirements for monitoring in urban areas. Design values for these monitors do not exceed 55% of the NAAQS, indicating that significant contribution to air quality from Nebraska or Iowa sources is unlikely.

Based on the information provided, NDEE asserts that SO₂ emissions from Nebraska sources do not interfere with maintenance or attainment of the NAAQS in the area surrounding the Walter Scott Jr. Energy Center.

George Neal North and George Neal South (Woodbury County, IA)

These are two EGUs operated by MidAmerican Energy Company, and each are located approximately 1 km from the Nebraska border: George Neal North, in Sergeant Bluff, IA and George Neal South, in Salix, IA.

There are no significant sources of SO₂ in Nebraska located within 50 km of these facilities, and the surrounding area (Woodbury County) was designated "Unclassifiable" by EPA in Round 2 of the 2010 1-Hour SO₂ NAAQS designations process.¹⁸ The map in **Figure 27** shows the locations of the George Neal facilities (green markers), the nearest Nebraska SO₂ sources – Lon D Wright Power Plant and North Omaha Station (red markers), and the former Woodbury (IA) SO₂ monitor (blue marker).

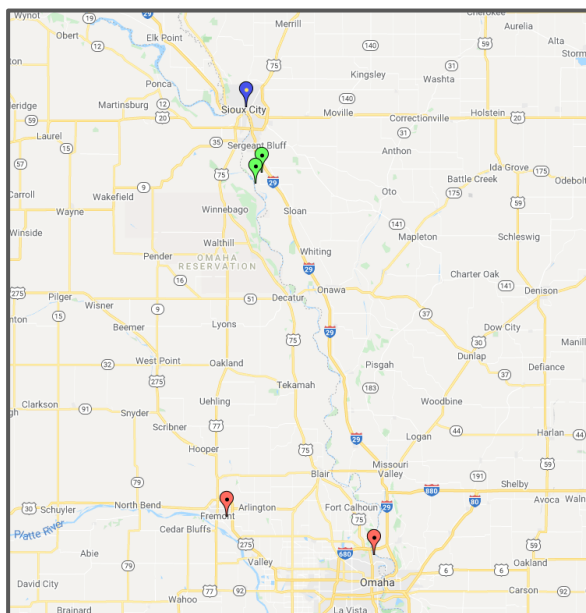


Figure 27. George Neal Facilities and Nearest Nebraska SO₂ Sources

Source: Created at ZeeMaps www.zeemaps.com

¹⁶ EPA Air Markets Program Data <https://ampd.epa.gov/ampd/>

¹⁷ Data Requirements Rule and Iowa's Round 3 Designations Technical Support Document for the 2010 SO₂ NAAQS (December 19, 2016, revised April 3, 2017) <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/Implementation-Plans>

¹⁸ Air Quality Designations for the 2010 Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard—Round 2 <https://www.govinfo.gov/content/pkg/FR-2016-07-12/pdf/2016-16348.pdf#page=1>

George Neal North (Salix, IA) currently operates one coal-fired unit (Unit 3) fitted with SO₂ controls (scrubber), and facility emissions have decreased by 36.5% during the period 2014-2017. Two additional coal-fired units (Units 1 and 2) were retired in 2016 when air construction permits for the units were rescinded, and facility SO₂ emissions showed a significant decrease in 2017 (**Table 5**, page 38). Emissions from 2019¹⁹ indicate an overall 52.1% decrease since 2014.

George Neal South (Sergeant Bluff, IA) currently operates one coal-fired unit which is fitted with SO₂ controls (scrubber), and facility SO₂ emissions have decreased by 36.1% during the period 2014-2017 (**Table 5**, page 38). Emissions from 2019²⁰ indicate an overall 61.6% decrease since 2014.

A 2015 modeling analysis for the George Neal facilities predicted the highest 3-year average 99th percentile 1-hour average concentration of 194.8 µg/m³ (99% of the NAAQS). This analysis included units in operation at both facilities, with George Neal North Units 1 and 2 modeled as burning natural gas rather than coal to account for a Consent Agreement with Sierra Club that these units cease utilization of coal as a fuel by April 16, 2016. No Nebraska facilities were included in this modeling analysis.

Iowa submitted its Round 2 Designation Recommendations and Technical Support Document²¹ to EPA in November 2015, which included the 2015 modeling analysis, and recommended a designation of attainment for Woodbury County. EPA responded²² to Iowa with its intention to designate the county as “Unclassifiable”, due to the lack of federal enforceability of George Neal North Units 1 and 2 being limited to burning only natural gas. Likewise, EPA expressed concern that the modeling grid used in the analysis (extending out 5 km from the facilities) was less than the distance of 20 km which is typically used and that areas outside the edge of the grid in Iowa’s analysis had the potential to exceed the NAAQS. Iowa responded²³ and submitted additional documentation showing modeling results with the grid extended to 10 km, indicating that pollutant levels were decreasing in the extended area, with a predicted maximum concentration of 195.46 µg/m³ (99.7%) of the NAAQS. In this submission, Iowa again requested a designation for Woodbury County of attainment.

In September 2016, Iowa DNR rescinded air construction permits for George Neal North Units 1 and 2, which ceased operation. Iowa submitted its designation recommendations for Round 3²⁴ to EPA in January 2017, again requesting a designation of attainment for Woodbury County. This submission included a description of Iowa DNR’s rescission of the air construction permits for George Neal North Units 1 and 2 and noted that a revised modeling analysis was not necessary, given that the original analysis indicated attainment with the standard.

¹⁹ EPA Air Markets Program Data <https://ampd.epa.gov/ampd/>

²⁰ EPA Air Markets Program Data <https://ampd.epa.gov/ampd/>

²¹ Iowa Data Requirements Rule and Round 2 Designations Technical Support Document (November 4, 2015) <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/Implementation-Plans>

²² Round 2 EPA Response Letter (February 16, 2016) <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/Implementation-Plans>

²³ Round 2 Iowa DNR Response to EPA Letter (April 4, 2016) <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/Implementation-Plans>

²⁴ Round 3 Iowa SO₂ Recommendation Letter to EPA (January 5, 2017) <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/Implementation-Plans>

EPA responded to Iowa with its intended designations on August 22, 2017, noting in the technical support document²⁵ that the designation of “Unclassifiable” for Woodbury County would not be affected by the Round 3 designations. Re-designation of this area will depend on subsequent EPA action; per the statement in EPA’s intended designations letter²⁶, “The EPA will promulgate the final designations for the areas identified in this letter by December 31, 2017. Upon completion of this designation action, there will be no remaining areas in Iowa to be designated.”

Iowa DNR operated a SO₂ monitor (Sergeant Bluff, AQS ID 19-193-0020) in Woodbury County until July 2017, however, its location was not deemed sufficient to measure the maximum impacts from these facilities. The 2014-2016 DV for this monitor was measured at 12% of the NAAQS (**Table 7**).

Based on the information provided, NDEE asserts that SO₂ emissions from Nebraska sources do not interfere with maintenance or attainment of the NAAQS in the area surrounding the George Neal facilities.

²⁵ Technical Support Document, Chapter 14 Proposed Round 3 Area Designations for the 2010 1-Hour SO₂ Primary National Ambient Air Quality Standard for Iowa (December 19, 2016)

https://www.epa.gov/sites/production/files/2017-08/documents/14_ia_so2_rd3-final.pdf

²⁶ EPA Intended Round 3 SO₂ Designations for Iowa (August 22, 2017)

<https://www.epa.gov/sites/production/files/2017-08/documents/ia-epa-resp3.pdf>

2) Missouri Sources

Exide Technologies – Canon Hollow Recycling Center (Holt County, MO)

This source is a battery recycling center located in Forest City, MO, approximately 18 km from the Nebraska border. There are no significant sources of SO₂ in Nebraska located within 50 km of the facility, and the area surrounding the recycling center (Holt County) was designated “Attainment/Unclassifiable” by EPA in Round 3 of the 2010 1-Hour SO₂ NAAQS designations process.²⁷

The locations of the Canon Hollow Recycling Center (green marker), Nebraska City Station (red marker), and Troost monitor (blue marker) are shown on the map in **Figure 28**.

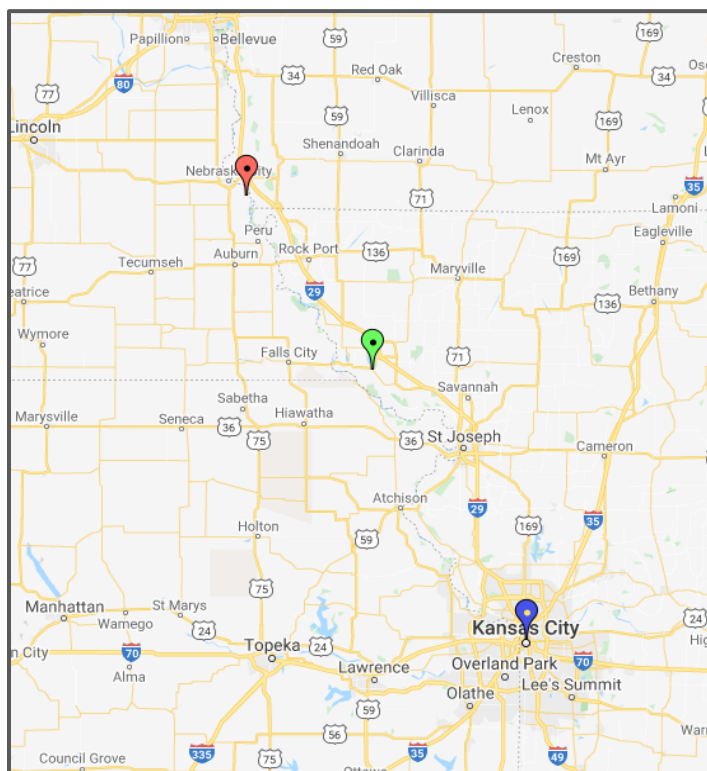


Figure 28. Canon Hollow Recycling Center – Nearest Nebraska SO₂ Source – Troost SO₂ Monitor

Source: Created at ZeeMaps www.zeemaps.com

Sulfur dioxide emissions at this facility are attributed to the blast furnace used for the lead acid battery recycling process. The furnace is fitted with an afterburner, baghouse, and scrubber to control emissions.²⁸

The nearest ambient air quality SO₂ monitor is the Troost monitor, located in Jackson County, MO. This monitor is approximately 188 km from Nebraska City Station and 118 km from the

²⁷ Air Quality Designations for the 2010 Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard—Round 3 (January 9, 2018) <https://www.govinfo.gov/content/pkg/FR-2018-01-09/pdf/2017-28423.pdf>

²⁸ Part 70 Operating Permit, Exide Technologies – Canon Hollow (August 19, 2019) <https://dnr.mo.gov/env/apcp/permits/docs/exide-chollow2019op.pdf>

Canon Hollow facility, distances which are beyond the spatial scale of this analysis. Design values for the Troost monitor have fallen significantly since 2015, and the most recent DVs are less than 15% of the NAAQS.²⁹ Jackson County, MO, was designated as “Nonattainment” by EPA in Round 1 of the 2010 1-Hour SO₂ NAAQS designations process³⁰. Because the monitor is now demonstrating compliance with the NAAQS, the Missouri DNR is preparing a re-designation request and maintenance plan for the 2010 SO₂ NAAQS for submission to EPA.^{31,32}

Based on the information provided, NDEE asserts that SO₂ emissions from Nebraska sources do not interfere with maintenance or attainment of the NAAQS in the area surrounding the Canon Hollow Recycling Center.

Kansas City Power and Light (KCPL) Lake Road Generating Station (Buchanan County, MO)

This EGU is located in Saint Joseph, MO, approximately 50 km from the Nebraska border. There are no significant sources of SO₂ in Nebraska located within 50 km of the facility, and the area surrounding this EGU (Buchanan County) was designated “Attainment/Unclassifiable” by EPA in Round 3 of the 2010 1-Hour SO₂ NAAQS designations process.

The locations of the Lake Road Generating Station (green marker), Nebraska City Station (red marker), and Troost monitor (blue marker) are shown on the map in **Figure 29**.

The Lake Road Generating Station currently operates one coal-fired boiler (Boiler #5). In March 2016, the Missouri DNR issued Administrative Order on Consent (AOC) No. APCP-2015-118, stipulating that Lake Road would cease burning coal in Boiler #6 by April 16, 2016, and use natural gas as the primary fuel and No. 2 fuel oil as secondary fuel. At the request of KCPL in February 2018, the 2016 AOC was amended to allow for the use of low sulfur coal in Boiler #5 as the primary fuel. The changes to the fuel makeup for these boilers has strengthened Missouri’s plan to control SO₂

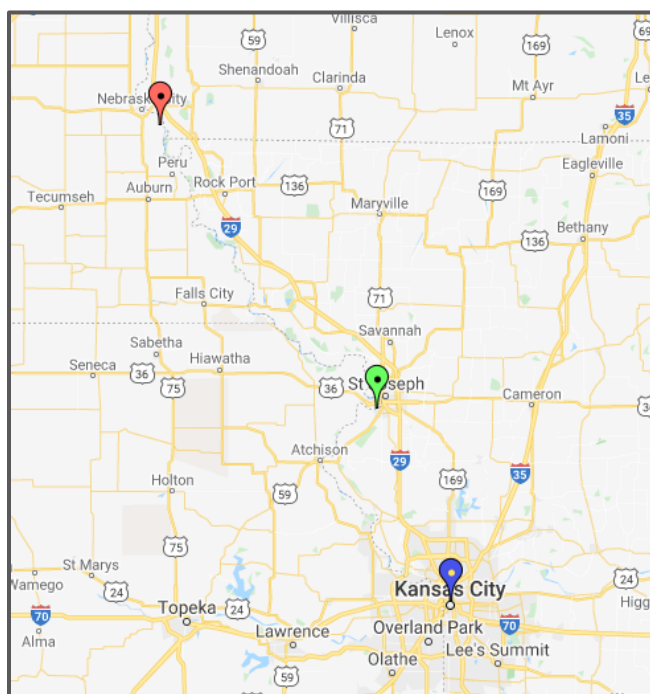


Figure 29. Lake Road Generating Station – Nebraska City Station – Troost Monitor

Source: Created at ZeeMaps www.zeemaps.com

²⁹ Missouri DNR Air Quality Analysis for Sulfur Dioxide (SO₂), Annual Summary through August 16, 2020 <https://dnr.mo.gov/env/apcp/docs/so2monitoringdata.pdf>

³⁰ Air Quality Designations for the 2010 Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard—Round 1 <https://www.govinfo.gov/content/pkg/FR-2013-08-05/pdf/2013-18835.pdf>

³¹ Missouri DNR Withdrawal Request for Nonattainment Area Plan – Jackson County SO₂ Nonattainment Area <https://dnr.mo.gov/env/apcp/docs/jack-so2-naa-withdrawal-request.pdf>

³² Missouri DNR Round 4 SO₂ Designation Recommendation https://www.epa.gov/sites/production/files/2020-07/documents/mo_round_4_so2d_recommendation_04-30-20.pdf

emissions from this facility. Since 2016, SO₂ emissions from this facility have decreased by 97.8%.³³

The nearest ambient air quality SO₂ monitor is the Troost monitor, located in Jackson County, MO. This monitor is approximately 188 km from Nebraska City Station and 74 km from the Lake Road facility, distances which are beyond the spatial scale of this analysis. Design values for the Troost monitor have fallen significantly since 2015, and the most recent DVs are less than 15% of the NAAQS.³⁴ Jackson County, MO, was designated as “Nonattainment” by EPA in Round 1 of the 2010 1-Hour SO₂ NAAQS designations process.³⁵ Because the monitor is demonstrating compliance with the NAAQS, the Missouri DNR is preparing a re-designation request and maintenance plan for the 2010 SO₂ NAAQS for submission to EPA.^{36,37}

Based on the information provided, NDEE asserts that SO₂ emissions from Nebraska sources do not interfere with maintenance or attainment of the NAAQS in the area surrounding the Lake Road Generating Station.

³³ EPA Air Markets Program Data <https://ampd.epa.gov/ampd/>

³⁴ Missouri DNR Air Quality Analysis for Sulfur Dioxide (SO₂), Annual Summary through August 16, 2020 <https://dnr.mo.gov/env/apcp/docs/so2monitoringdata.pdf>

³⁵ Air Quality Designations for the 2010 Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard—Round 1 <https://www.govinfo.gov/content/pkg/FR-2013-08-05/pdf/2013-18835.pdf>

³⁶ Missouri DNR Withdrawal Request for Nonattainment Area Plan – Jackson County SO₂ Nonattainment Area <https://dnr.mo.gov/env/apcp/docs/jack-so2-naa-withdrawal-request.pdf>

³⁷ Missouri DNR Round 4 SO₂ Designation Recommendation https://www.epa.gov/sites/production/files/2020-07/documents/mo_round_4_so2d_recommendation_04-30-20.pdf

V. Sulfur Dioxide Monitoring Data Trends

a. Nebraska Monitoring Data Trends

Design value trends for existing SO₂ monitors in Nebraska's air quality network are shown in **Table 6**. All of these SO₂ monitors have current (2017-2019) DVs well below the 2010 1-Hour SO₂ NAAQS. Data for 2019 is included for source-oriented monitors which are operated pursuant to the DRR, and DVs from 2019 were used in calculating the level of compliance with the 2010 1-Hour SO₂ NAAQS (% of NAAQS).

Table 6. Nebraska SO₂ Monitoring Design Value Trends							
Monitor	Location		99th percentile daily max (ppb)				% of NAAQS
	County	MSA	2017	2018	2019	Design Value	
Whitmore	Douglas	Omaha	55	29	38	41	55%
Omaha NCORE	Douglas	Omaha-Council Bluffs	46	17	9	24	32%
North Omaha	Douglas	Omaha	36	37	29	34	45%
Sheldon	Lancaster	Lincoln	44	10	33	29	39%
Union County #1	Union (SD)	Sioux City	4	4	3	3	4%

Source: Nebraska 2020 Air Quality Network Plan, EPA Air Quality System (AQS) <https://www.epa.gov/aqs>

Source-oriented monitors in Douglas (North Omaha) and Lancaster Counties (Sheldon) were installed pursuant to the 2010 1-Hour SO₂ NAAQS DRR for the purpose of characterization of air quality in the areas surrounding OPPD's North Omaha Station in Douglas County, and Nebraska Public Power District's (NPPD) Sheldon Station in Lancaster County. Both monitors are demonstrating compliance with the NAAQS and EPA has proposed designation of "Attainment/Unclassifiable" for both areas.

b. Adjacent States' Monitoring Data Trends

Table 7 contains DVs for adjacent state SO₂ monitors located within 50 km of the Nebraska border. Also included are DVs from an SO₂ monitor in Woodbury County, IA (Sergeant Bluff, IA), which discontinued operation in July 2017. All DVs are well below the NAAQS.

Table 7. Adjacent States' SO₂ Monitoring Design Value Trends						
Monitor	3-year Design Values					% of NAAQS
	2015	2016	2017	2018	2019*	
Cheyenne NCORE, WY	10	9	9	4	5	5%
Union County #1	5	4	4	3	3	4%
Sergeant Bluff, IA	12	9	9			12%

Source: EPA Air Quality System (AQS) <https://www.epa.gov/aqs>

VI. Prongs 1 and 2 Analysis

The Prongs 1 and 2 analysis in this document addresses the transport of SO₂ to areas outside of Nebraska, including those designated as “Maintenance” or “Nonattainment”, and impacts on that state’s ability to attain or maintain compliance with the 2010 1-Hour SO₂ NAAQS.

Nonattainment and maintenance areas outside of Nebraska and within 50 km of the Nebraska border. There are no nonattainment or maintenance areas in any adjacent state located within 50 km of the Nebraska border.

Adjacent state areas within 50 km of the Nebraska border yet to be designated OR presently designated “Unclassifiable” for the 2010 1-Hour SO₂ NAAQS. There is one area located in an adjacent state presently designated as “Unclassifiable”, identified as Woodbury County, IA. This area was characterized pursuant to the 2010 1-Hour SO₂ NAAQS using air dispersion modeling; EPA initially issued a designation of “Unclassifiable” (81 FR 45039, July 12, 2016). The Governor of Iowa requested re-designation of this area to attainment, as described in **section IV.b.** of this document. To date, EPA has taken no action on this request.

NDEE asserts that SO₂ emissions from sources within Nebraska do not significantly contribute to air quality in this area for the following reasons:

1. The distance between significant sources of SO₂ in Nebraska are more than 50 km from the George Neal North and George Neal South facilities;
2. The Sergeant Bluff SO₂ monitor that was in operation in this county until July 1, 2017 maintained DVs less than 50% of the NAAQS for the duration of the operating period;
3. This area was not designated as “Nonattainment” by EPA in Round 1 of the designations process.

Sulfur dioxide emissions impacts from Nebraska sources on adjacent state sources and monitors within 50 km of the Nebraska border. NDEE asserts that no significant impacts are indicated and that the State of Nebraska has demonstrated compliance with CAA section 110(a)(2)(D)(i)(I) Prongs 1 and 2.

Nebraska City Station (NCS)

Significant contribution of SO₂ to the Omaha NCORE monitor (Omaha-Council Bluffs MSA) is not indicated, based its distance from the monitor (>50 km) and the low three-year DV for this monitor (32% of the NAAQS).

Significant contribution of SO₂ to the Walter Scott Jr. Energy Center (IA) is not indicated given the distance between these sources (66 km), and the maximum SO₂ impact predicted by the NCS modeling analysis (68% of the NAAQS).

Significant contribution of SO₂ to the Exide Technologies Canon Hollow facility (MO), and the KCPL Lake Road Generating Station (MO), is not indicated given the distance between these sources (80 km and 126 km, respectively) and the low three-year DV for the nearest monitor (Troost, 15% of the NAAQS).

North Omaha Station

Significant contribution of SO₂ to the Omaha NCORE or Whitmore monitors (Omaha-Council Bluffs MSA) is not indicated based on the low three-year DVs for these monitors (32% and 55% of the NAAQS, respectively). Moreover, source-oriented monitoring was conducted from 2017-2019 at a location determined to be the point of highest predicted impact from this source, which demonstrated a DV that is 45% of the NAAQS.

Significant contribution of SO₂ to the Walter Scott Jr. Energy Center (IA) from this source is not indicated given the maximum SO₂ impact predicted by the modeling analysis (68% of the NAAQS).

Ash Grove Cement Company

Significant contribution of SO₂ to the Omaha NCORE monitor (Omaha-Council Bluffs MSA) is not indicated based on the source location with respect to the monitor (southwest), predominant wind direction (southeast-northwest), and the low three-year DV for this monitor (32% of the NAAQS).

Significant contribution of SO₂ to the Walter Scott Jr. Energy Center (IA) from this source is not indicated given Ash Grove's location with respect to Walter Scott (southwest), predominant wind direction (southeast-northwest), and the maximum SO₂ impact predicted by the modeling analysis (68% of the NAAQS).

Lon D Wright Power Plant

Significant contribution of SO₂ to the Omaha NCORE monitor (Omaha-Council Bluffs MSA) is not indicated based on the distance between the source and the monitor (50 km), and the low three-year DV for this monitor (32% of the NAAQS).

Significant contribution of SO₂ to the Walter Scott Jr. Energy Center (IA) from this source is not indicated given the distance between these sources (58 km), predominant wind direction (south/southeast-north/northwest), and the maximum SO₂ impact predicted by the modeling analysis (68% of the NAAQS).

Clean Harbors Environmental Services

Significant contribution of SO₂ to the Cheyenne NCORE monitor (WY) is not indicated based on the distance between the source and the monitor (94 km), the source orientation with respect to the monitor (southwest), the predominant wind direction (northwest), and the low three-year DV for this monitor (5% of the NAAQS).

Significant contribution of SO₂ from this source on the nearest adjacent state source is not indicated given that the distance between sources is more than 50 km.

Western Sugar Cooperative

Significant contribution of SO₂ to the Cheyenne NCORE monitor (WY) is not indicated based on the distance between the source and the monitor (90 km), the source orientation with respect to the monitor (east), the predominant wind direction (northwest), and the low three-year DV for this monitor (5% of the NAAQS).

Significant contribution of SO₂ from this source on the nearest adjacent state source is not indicated given that the distance between sources is more than 50 km.

Douglas County Recycling Landfill

Significant contribution of SO₂ to the Omaha NCORE monitor (Omaha-Council Bluffs MSA) is not indicated based on predominant wind direction and the low three-year DV for this monitor (32% of the NAAQS).

Significant contribution of SO₂ to the Walter Scott Jr. Energy Center (IA) from this source is not indicated given the low annual emissions from the landfill, and the maximum SO₂ impact predicted by the modeling analysis (68% of the NAAQS).

DRAFT

VII. Summary

Based on the analysis and discussion presented in this document, the NDEE submits this SIP revision and asserts that SO₂ emissions from sources within Nebraska do not interfere with the attainment or maintenance of the 2010 1-Hour SO₂ NAAQS in adjacent states. This assertion is summarized in the following statements, which are based on demonstrations provided in this document:

- 1) There are no 2010 1-Hour SO₂ NAAQS maintenance or nonattainment areas within 50 km of the Nebraska border;
- 2) There are no areas within 50 km of the Nebraska border that have been re-designated to a maintenance status for any previous NAAQS for this pollutant;
- 3) There are adjacent state areas within 50 km of the Nebraska border designated by EPA as “Nonattainment” for the 2010 1-Hour SO₂ NAAQS;
- 4) Sulfur dioxide emissions from Nebraska sources do not interfere with the ability of any adjacent states to maintain or attain the 2010 1-Hour SO₂ NAAQS;
- 5) Data from monitors located within 50 km of Nebraska’s shared borders indicate no significant contributions from Nebraska sources on adjacent states;
- 6) EPA has proposed to designate one area Nebraska within 50 km of the border (Douglas County, NE) as “Attainment/Unclassifiable” for the 2010 1-Hour SO₂ NAAQS; and
- 7) Monitoring data and Iowa DNR submissions to EPA addressing the sole adjacent state area within 50 km of the Nebraska border (Woodbury County, IA) indicate attainment with the 2010 1-Hour SO₂ NAAQS. Significant contributions to this area from Nebraska sources are not indicated by technical documentation presented in this document.

APPENDICES

1. Certification of Nebraska Infrastructure SIP – Prongs 1 and 2
2. Revised Designation Recommendation Letter to EPA (May 6, 2020) and EPA Responses (August 2020)
3. Omaha Public Power District Board of Directors Resolution No. 6006
4. Western Sugar Cooperative Consent Decree, April 16, 2019
5. Record of Public Notice
6. Comments Received OR Statement of No Comments Received
7. Public Hearing Documents (Affadavit, Summary)
8. Responses to Comments
9. Nebraska Statutes: Nebraska Environmental Protection Act (NEPA), Public Records Act, Administrative Procedure Act, Negotiated Rulemaking Act
10. Nebraska 2020 Air Monitoring Network Plan
11. Nebraska Accountability and Disclosure Act
12. Nebraska Accountability and Disclosure Commission
13. Title 115 – Nebraska Rules of Practice and Procedure
14. Title 129, Chapter 4 – Ambient Air Quality Standards